

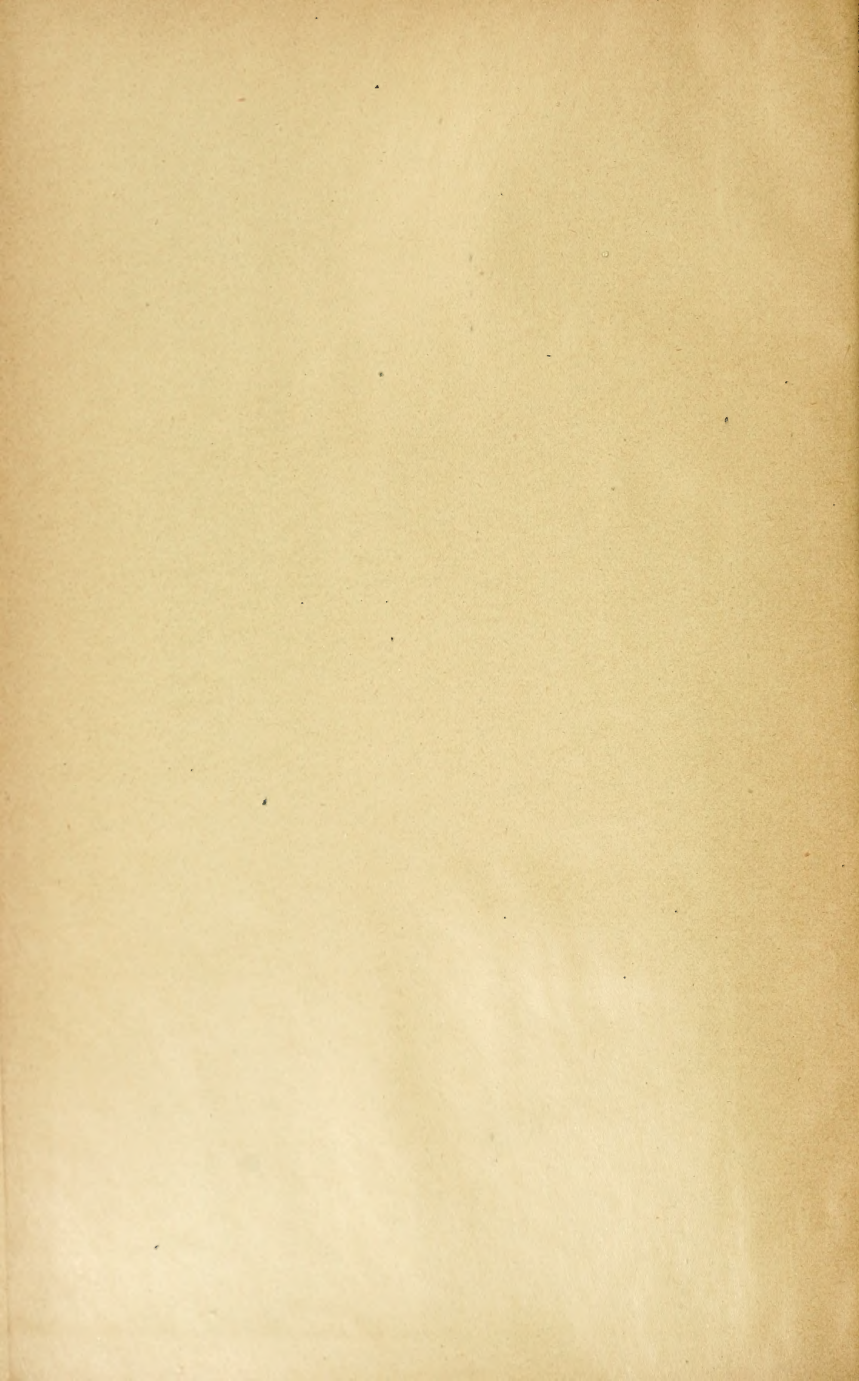


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CONTRIBUTORS TO VOLUME III.

EWART, WILLIAM, M.D., F.R.C.P.

NORRIS, RICHARD C., M.D.

SPILLER, WILLIAM G., M.D.

STELWAGON, HENRY W., M.D.

PROGRESSIVE MEDICINE.

A QUARTERLY DIGEST OF ADVANCES, DISCOVERIES,
AND IMPROVEMENTS

IN THE

MEDICAL AND SURGICAL SCIENCES.

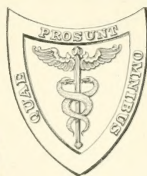
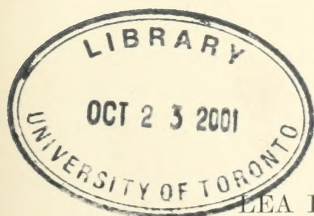
EDITED BY

HOBART AMORY HARE, M.D.,

PROFESSOR OF THERAPEUTICS AND MATERIA MEDICA IN THE JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA; PHYSICIAN TO THE JEFFERSON MEDICAL COLLEGE HOSPITAL; LAUREATE OF THE ROYAL ACADEMY OF MEDICINE IN BELGIUM, OF THE MEDICAL SOCIETY OF LONDON; CORRESPONDING FELLOW OF THE SOCIEDAD ESPAÑOLA DE HIGIENE DE MADRID; MEMBER OF THE ASSOCIATION OF AMERICAN PHYSICIANS, ETC.

VOLUME III. SEPTEMBER, 1899.

DISEASES OF THE THORAX AND ITS VISCERA, INCLUDING THE HEART,
LUNGS, AND BLOODVESSELS—DISEASES OF THE SKIN—
DISEASES OF THE NERVOUS SYSTEM—
OBSTETRICS.



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LIST OF CONTRIBUTORS.

HENRY B. BAKER, M.D.,

Michigan State Board of Health, Lansing, Mich.

WILLIAM T. BELFIELD, M.D.,

Associate Professor of Surgery in the Rush Medical College; Professor of Surgery in the Chicago Polyclinic, Chicago.

ALEXANDER D. BLACKADER, M.D.,

Professor of Pharmacology and Therapeutics and Lecturer on Diseases of Children in the McGill University, Montreal, Canada.

JOSEPH C. BLOODGOOD, M.D.,

Associate in Surgery in the Johns Hopkins University; Assistant Surgeon to the Johns Hopkins Hospital, Baltimore, Md.

JOHN ROSE BRADFORD, M.D., F.R.C.P.,

Professor of Materia Medica and Therapeutics in the University College, London; and Professor-Superintendent of the Brown Institution.

ALBERT P. BRUBAKER, M.D.,

Adjunct Professor of Physiology and Hygiene in the Jefferson Medical College, Philadelphia.

JOHN G. CLARK, M.D.,

Associate in Gynecology at the Johns Hopkins Hospital, Baltimore, Md.

WILLIAM B. COLEY, M.D.,

Clinical Lecturer on Surgery in the College of Physicians and Surgeons, New York, and Assistant Surgeon to the Hospital for the Ruptured and Crippled.

J. CHALMERS DA COSTA, M.D.,

Clinical Professor of Surgery in the Jefferson Medical College, Philadelphia.

WILLIAM EWART, M.D., F.R.C.P.,

Physician to and Joint Lecturer on Medicine at St. George's Hospital and Physician to the Belgrave Hospital for Children, London.

FREDERIC H. GERRISH, M.D.,

Professor of Anatomy in the Medical School of Maine, Portland, Me.

LUDVIG HEKTOEN, M.D.,

Professor of Pathology in the Rush Medical College, Chicago.

EDWARD JACKSON, M.D.,

Emeritus Professor of Ophthalmology in the Philadelphia Polyclinic.

RICHARD C. NORRIS, M.D.,

Instructor in Obstetrics in the University of Pennsylvania, Philadelphia; Physician-in-charge of Preston Retreat.

ROBERT L. RANDOLPH, M.D.,

Associate in Ophthalmology and Otology in the Johns Hopkins University, Baltimore, Md.

WILLIAM G. SPILLER, M.D.,

Professor of Diseases of the Nervous System in the Philadelphia Polyclinic, Philadelphia.

HENRY W. STELWAGON, M.D.,

Clinical Professor of Diseases of the Skin in the Jefferson Medical College, Philadelphia.

ALFRED STENGEL, M.D.,

Instructor in Clinical Medicine in the University of Pennsylvania, Philadelphia.

CHARLES G. STOCKTON, M.D.,

Professor of the Practice of Medicine and Clinical Medicine in the University of Buffalo, Buffalo, N. Y.

WILLIAM SYDNEY THAYER, M.D.,

Associate Professor of Medicine in the Johns Hopkins University, Baltimore, Md.

A. LOGAN TURNER, M.D. (EDIN.), F.R.C.S. EDINBURGH,

Surgeon for Diseases of the Ear and Throat to the Deaconess Hospital; Assistant to the Lecturer on Laryngology in the University of Edinburgh.

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PROGRESSIVE MEDICINE.

SEPTEMBER, 1899.

DISEASES OF THE THORAX AND ITS VISCERA, INCLUDING THE HEART, LUNGS, AND BLOODVESSELS.

BY WILLIAM EWART, M.D., F.R.C.P.

THE PHYSICAL METHODS OF DIAGNOSIS.

Percussion and Auscultation. For success in *auscultation* we are largely dependent upon the quality of our stethoscope; the personal factor is merely delicacy of hearing, a trained appreciation of the sounds which the stethoscope conveys, and a correct interpretation of their meaning. It is not sufficiently realized that *percussion* is always an instrumental method, even when the fingers only are used, and that like all other instrumental arts it cannot be brought to any perfection without considerable application and persevering practice. It is, therefore, inevitable that individual observers should differ in their efficiency as percussors, much as artists do, and that some skepticism should be entertained as to the genuineness of results which some are unable to obtain for themselves. The pleximeter has this great advantage, that it tends to equalize these differences between observers by substituting an instrument of unvarying physical properties for so variable an instrument as the finger. I am confident that much less training is requisite for a satisfactory use of the pleximeter than of the finger, and that conclusive results are obtained with it much more rapidly in the clinical examination of the chest. Greater precision is also obtainable. I have met with the chief objections to its use in those who had never used it or had not given it a fair trial. For my part I entertain a high opinion of the capabilities of finger percussion, but I find it a much more difficult and laborious method to apply and a longer art to learn. Upon this ques-

tion, however, opinions will continue to differ, as the following remarks tend to show :

WHAT IS THE MINIMUM SIZE OF CONSOLIDATIONS WHICH CAN BE RECOGNIZED BY PERCUSSION? Oestreich¹ has fortified his belief in the efficacy of percussion by verifying percussions of the apices by subsequent necropsies. He believes that a single nodule the size of a cherry may be identified by percussion, but nothing smaller; he can place no reliance upon any fine localization or exact definition of size. He obtained finer results with finger percussion than with hammer and pleximeter.

I think that Oestreich would have had greater success with his pleximetric percussion had he abstained from using the hammer, which is worse than useless for the purpose in view.

The percussion of the tracheo-bronchial glands, an enlargement of which Fernet² considers to be an early diagnostic sign of phthisis when coupled with congestion of the base of the affected lung and râles at the apex, is a new departure in diagnosis. The enlargement of the gland is, he says, well brought out by percussion with the pleximeter combined with auscultation. Fernet's results are likely to meet with some incredulity, but I have obtained evidence by post-mortem verification that they are not imaginary, and that enlarged infratracheal glands will yield a dulness to careful percussion.

PLEXIMETRIC BONES. I have recently called attention to the fact that most of the bones of the chest act as pleximeters for the underlying viscera, and that most of them derive a considerable amount of conducted resonance from their contact with, or vicinity to, the lungs. Some of them are eminently "pleximetric"—*i. e.*, excellent conductors—and a few, such as the sternum, the clavicle, and the spine of the scapula, as well as the head of the humerus, lend themselves to "immediate" percussion, which cannot be applied to those covered by muscles, owing to the tenderness of the latter.

The percussion note of "pleximetric" bones, in particular of the clavicle, the sternum, and the scapula, cannot be adequately interpreted without bearing in mind the principle of conduction. This factor is of special importance in the percussion of the scapula, which plays the part of a huge pleximeter, and conduction renders it remarkably resonant in spite of its heavy muscular armature. On the other hand, a limited consolidation underlying a portion of the scapula is apt to confer by conduction a modified dulness to the entire scapular area.

THE PERCUSSION OF THE VERTEBRAL SPINES AND ITS DIAGNOSTIC USE. A systematic percussion of the vertebral spines does not appear

¹ Percussion of the Pulmonary Apices. *Zeit. f. klin. Med.*, vol. xxxv.; *Medical News*, November 19, 1898.

² *Arch. of Med.*, October 11, 1898; *Medical News*, November 19, 1898.

to have been hitherto practised, yet, as I have pointed out,¹ it is capable of yielding with a minimum of trouble important information in some cases of difficult diagnosis. With very slight variation at different levels the percussion note of the spinal processes is resonant throughout the length of the spine, and this is to be explained by the pleximetric conduction of pulmonary and intestinal resonances by the vertebrae. This pleximetric character may be easily demonstrated in various ways, as, for instance, by the fact that a considerable pleuritic effusion does not render the spines dull, the conducted resonance from the sound side, and, perhaps, from the compressed lung, prevailing over the dulling influence due to the fluid. Localized spinal dullness thus indicates local causes isolating the vertebrae at least partially from their usual plentiful supply of resonance, and we cannot expect slight causes to bring it about. All the greater, therefore, is the significance attaching to any marked dullness. This pleximetric conduction of distant local dullnesses is of value, since it conveys to us information from an otherwise inaccessible depth (measured by the long axis of the vertebra) as to mediastinal conditions which may be of the first importance. Thus, at different levels in the chest it may afford evidence of upper thoracic glandular enlargements, or of aneurism of the arch, or of œsophageal disease, or of swelling of the infratracheal glands, or, lastly, of pericardial effusion, the "lower dorsal dull patch," which is an invariable accompaniment of the latter, always including dullness of the eleventh and twelfth spines. Lower down abdominal and pelvic disease may in the same way be indicated by local dullness, as may be described in a future communication. For surgical diagnosis this method is likely to be of advantage. Mere infiltration of the vertebrae with cancer or tubercle would probably not modify their conveyed resonance, but spinal abscess, extensive outgrowths, tumors, etc., might dull the percussion note. My observations on these points are not yet completed, but I have already found this method of considerable use in the diagnosis of œsophageal disease and of mediastinal glandular enlargements in the interscapular region.

PLEXIMETRIC VISCERA. The viscera are also capable of acting as pleximeters. The simplest example of a pleximetric visceral resonance is that sometimes afforded by the spleen. Under the influence of gaseous distention of the stomach, and of the colon, the spleen may become not only resonant but tympanitic, and the "boxy" note which it yields will then enable us to determine its size with as much accuracy as when the customary dull note is our guide. This is of practical importance to the physician, who will sometimes have to decide whether the abnormal resonance at the axillary base is an extension of Traube's area and due

¹ *Lancet*, July 2, 1898.

to a stomach distended upward, or whether it is due merely to a pleximetric resonance of the spleen. For instance, in a case of cancer described by Michell Clarke,¹ where a tympanitic resonance was found at the left outer posterior base, together with a general dulness due to a pleuritic effusion, I suggested² as an explanation the probability of a pleximetric splenic resonance.

The ordinary resonance conveyed to the left lobe of the liver or to the lower part of the præcordium from an inflated stomach is too well known to need comment. When these abnormal resonances attain an unusual degree collateral evidence and additional physical signs will generally help us to determine whether they may be due to an intraperitoneal gaseous accumulation.

Of special interest to the surgeon is the pleximetric resonance sometimes assumed by the right lobe of the liver, simulating the presence of gas in front of that lobe.

"AUSCULTATORY FRICTION" is the convenient name applied by Ewart and Pearson³ to the method introduced in 1894 by Professor Bianchi in connection with the Biazzi-Bianchi phonendoscope. The expectations which had been raised as to its clinical value have not been fully realized; on the other hand, it is capable of much precision within a limited range of use. The principle and the procedure are analogous to those of auscultatory percussion. Any amplifying stethoscope, such as the phonendoscope, will have an advantage over the common stethoscope, but the latter is quite sufficient for all ordinary purposes. If the finger be drawn lightly over the skin, away from the spot where the chest-piece is applied, an otherwise inaudible sound of friction will be loudly heard through the stethoscope, but only for a short distance, beyond which it will cease. The edge of the nail or the top end of a pencil will answer the same purpose as the finger. If the chest-piece be applied over a hollow organ, such as the stomach, the intestine, or even the lung, the friction will continue to be perceived for a considerable distance without any diminution until it abruptly ceases to be heard. By repeating the operation in a radiating fashion an outline can be drawn of the vanishing points all around, and the area included by them will be found to correspond exactly with the superficial outline of the organ. It was in mapping out a distended colon that the method was rediscovered by Pearson at St. George's Hospital. The method stands alone in the case of its performance and in the absence of any disturbance to the patient, whose state may forbid rougher means of examination, and it is applicable to the study of other regions and organs. The practical experience hitherto gained shows that the method is nowhere so successful as in

¹ *Lancet*, October 1, 1898.

² *Ibid.*, August 27, 1898.

³ *Ibid.*, October 8, 1898.

mapping out the distended abdominal viscera, provided the abdominal walls themselves be not unduly tense. Excessive tension of the parietes puts a stop to its differentiating power. With this reservation the results are such as to deserve the attention of clinicians.

A VARIETY OF AUSCULTATORY PERCUSSION described by Prof. Andre Moussous under the name of "*signe de son*," or "*transsonance de la poitrine dans les affections pleurales et pulmonaires des enfants*,"¹ consists in striking a coin, which is applied to the chest-wall, with another coin while the observer is listening for the transmitted vibrations. It is found useful in the diagnosis of pleuritic effusion and of pulmonary infiltrations in children.

A useful chest-piece has been invented by Andrew H. Smith,² which can be fitted to the India-rubber tube of an ordinary stethoscope. It is cup-shaped, and so arranged that it can be slipped under the back so that auscultation of the dorsal region can be performed without disturbing the patient—a valuable facility in cases of pneumonia.

Inspection. LITTEN'S SIGN. The following account is given by Richard C. Cabot³ of the important phenomenon which was first noticed and described by Litten⁴ (1892) under the name of the "Diaphragm Phenomenon." If the person lies with the feet pointing straight toward a window (cross lights being excluded) and the chest exposed the following appearances can be observed during forced respiration: Along both axillæ a sort of shadow is seen to descend during deep inspiration from about the seventh to about the ninth rib, passing up again during expiration. It is best seen in spare, muscular young persons of either sex. The observer should stand with his back to the light. The shadow travels on an average from two and a half to three inches, according to Litten. Martius points out that the shadow begins to move not with the beginning of inspiration but a little later. Cabot gives his own personal experience in 220 cases, which confirms that of previous observers:

1. In 102 normal chests the diaphragm shadow showed an average excursion of two and one-third inches on each side of the chest.
2. In 11 cases of pleuritic effusion, 5 cases of adherent pleura and 3 cases of acute dry pleurisy, the shadow was absent on the affected side.
3. In 6 cases of emphysema the shadow was either absent or nearly absent.
4. In 30 cases of phthisis the excursion of the diaphragm was diminished on the affected side (except in one case); even incipient cases show this change.
5. Muscular weakness may greatly limit the excursion of the shadow, and in obesity it is often missed. It may be obtained only during a fit of coughing.
6. Great enlargement of the liver or spleen

¹ Revue mens. des Mal. de l'Enf., January, 1899, vol. xvii. p. 1.

² Medical Record, April 1, 1899.

³ Medical News, April 15, 1899.

⁴ Deutsche med. Wochenschrift, 1892.

may exist without abolishing the shadow, but a very large accumulation of ascitic fluid may render it invisible. 7. The diaphragm shadow seems to render unnecessary the use of the X-rays in the investigation of diaphragmatic movements.

Palpation. As a method of physical examination, and as a means of determining the position and size of the viscera, palpation is strongly advocated by Robert Maguire.¹ Further experiments convinced him that for chest and abdominal examination his method is more delicate and accurate than percussion; by it the outlines of the heart, liver, and spleen can be easily defined by simply passing the fingers over the body wall. Even the sternum is no obstacle to defining the resistance and, therefore, the outline of the heart. The position of the kidneys can also be shown. Pleural effusions can be accurately estimated, and small areas of resistance, undiscoverable by percussion, can at times be traced as evidence of former pleurisy or pneumonia.

I have found the method useful in practice, and I believe that any observer can train his fingers for its efficient application, though original delicacy of touch is indispensable for the attainment of some of the results which Maguire describes. The rapidity of the method and its simplicity are great recommendations, and it is one which for practical use will well repay persevering study.

The Röntgen Rays. A great future lies before radioscopy and radiography in connection with diseases of the thorax, a cavity within which the viscera are even further removed from direct exploration than those within the abdomen. Before discussing their value in diagnosis, however, I must refer to the advances made with their help in anatomy and physiology, particularly in our knowledge of the bronchi and of the diaphragm.

THE RELATIONS OF THE TRACHEA AND BRONCHI TO THE THORACIC WALLS AS DETERMINED BY THE RÖNTGEN RAYS have been studied in an important investigation by Joseph A. Blake,² of New York. This is largely corroborative of the work which had previously been accomplished by others with the injection methods; but we owe to his careful analysis of the skiagrams some otherwise unattainable localizations which may prove of much use to physicians as well as to surgeons. In connection with the theoretical aspect of the subject, it is interesting to find that his criticism of Aeby's views agrees with those expressed by me in the "Anatomy of the Bronchi and Pulmonary Vessels," with which he does not appear to have been acquainted. He refers, however, to the description given by G. S. Huntington in "The Eparterial Bronchial System of the Mammalia."³

¹ *Transactions Medical Society of London*, vol. xxi.

² *The American Journal of the Medical Sciences*, March, 1899.

³ *Annals of the New York Academy of Sciences*, xi. 9, 1898.

THE DIAPHRAGM: ITS LEVEL AND MOVEMENTS STUDIED WITH THE RÖNTGEN RAYS. The diaphragm had hitherto remained inaccessible to our methods and outside the sphere of percussion. The fact that it can now be brought indirectly under inspection is one of our most important advances in the physical examination of the thorax; for the glands and other mediastinal structures which yield their shadows had not been to the same extent destitute of all opportunities for physical study.

Radioscopy and Radiography as Helps in the Diagnosis of Disease. These have been vigorously pushed forward of late. Although few new facts have been determined, many old ones have received confirmation.

IN ACUTE AND IN SUBACUTE BRONCHITIS, according to Bouchard and Claude, the radioscopic appearances are negative.

SIMPLE BRONCHOPNEUMONIA. In this opacities are slight. Maragliano has observed that in non-tuberculous cases these slight opacities become less marked at the height of inspiration, in contrast with the permanence of the shadows of the denser deposits of the tuberculous variety.

IN LOBAR PNEUMONIA the same observers find that on the fluorescent screen the considerable opacity due to the consolidations varies from day to day in its extent and in its intensity.

IN EMPHYSEMA the special radioscopic features are stated by Bouchard and Claude to be (1) a greater general transparency, (2) a less pronounced outlining of the ribs, and, particularly, (3) an increased extent of the transparent basic zone, both in front, over the lower pleural groove, and behind, below the upper level of the diaphragm.

The shadow of the diaphragm is an important aid to diagnosis, both in connection with its main level and with its mobility. In lobar pneumonia the movements are diminished on the affected side. This also obtains in pulmonary tuberculosis even at quite an early stage. In pneumothorax they are greatly restricted on the side of the disease. Pulmonary emphysema reduces them but bronchitis does not.

A. Abrams¹ warns us against the danger of misinterpreting some of the appearances obtained by pulmonary radioscopy. He points out that shadows are given on the fluoroscope by the evanescent atelectasis zones which occur in healthy individuals and are dispelled by deep inspiration. It is, therefore, essential for a safe radioscopic diagnosis of pulmonary consolidation to instruct the patient to breathe deeply.

Direct Bronchoscopy. Killian² describes the available methods of

¹ Philadelphia Medical Journal, November 26, 1898.

² Münch. med. Wochenschrift, July 5, 1898.

inspection of the bronchi as the *indirect* or mirror method, and the *direct* superior and inferior methods. The direct method affords a better view and has been successful in children even where the laryngoscope had failed. Inferior bronchoscopy is always possible; superior bronchoscopy only in those in whom autoscopia can be carried out. A 20 per cent. cocaine solution has to be applied to the pharynx and larynx. This should enable the tracheoscopy tube (the same as the œsophagoscopy tube) to be passed into the main bronchi. Kirstein's frontal lamp may be used instead of the electroscope. Killian has witnessed no unfavorable results. The detection of foreign bodies and of bronchial affections are only part of the advantages which may accrue from the use of the method.

RESPIRATION, NATURAL AND ARTIFICIAL. THE INHALATION OF GASES AND OF COMPRESSED AIR.

Artificial Respiration. With reference to the sometimes inevitable occurrence of acute traumatic pneumothorax in the course of surgical operations, Matas¹ suggests that the means to prevent pulmonary collapse and its dangers is artificial inflation of the lung, followed by artificial respiration. The best method would be an O'Dwyer intubation tube inserted into the glottis and the use of Fell's bellows for inflation.

THE INHALATION OF THE GASTRIC CONTENTS DURING ARTIFICIAL RESPIRATION. Anton Brosch² publishes thirty-one experiments he has made, in order to prove the possibility of the gastric contents being drawn into the lungs during artificial respiration. The greatest quantity of fluid which can be aspirated by artificial respiration amounts to 1210 c.c.

Aspiration of the gastric contents during artificial respiration is more easy in the living subject than in the dead body. The methods of artificial diaphragmatic respiration are the sources of the greatest danger. An experiment made by Brosch proved that even in the living subject, when the stomach is full, its contents may be pressed into the pharyngeal cavity by massage, and that the cardiac orifice offers but a trifling resistance. An elastic tube introduced into the œsophagus will prevent the contents of the stomach from finding their way into the air passages, and Brosch recommends that this precaution should be taken before artificial respiration is commenced.

The Respiratory Interchanges in Diabetes. These are found by Robin and Binet to be much increased, especially the absorption of

¹Annals of Surgery, April, 1899.

²Archiv. für klin. Med. Lancet, August 27, 1898.

³Rev. Gen. de Path. Int., October 5, 1898; Journal of American Medical Association, February 1, 1899.

oxygen. This would show that diabetes is a disease due to exaggerated nutrition. Diet and a sedative treatment decrease the respiratory changes along with the glycosuria. If the interchange diminishes very much in a diabetic, while the glycosuria does not diminish, there is danger of coma, and the defective chemical process should be stimulated by every possible means.

Oxygen as an Antidote for Coal Gas. Herbert E. Friend's¹ case demonstrates that oxygen is directly curative for coal-gas intoxication. The patient, after lying all night in a room in which gas was escaping, was found in profound coma, pulseless, the eyes open, pupils widely dilated, face and lips dusky, and in a condition of marked opisthotonos. The respiration was shallow and irregular and the heart-sounds hardly audible. Strychnine and digitalis were injected in full doses and oxygen administered as soon as procured. The relief it gave was the more striking because each interval in its use was followed by a return of urgent symptoms. The muscular spasms subsided in four hours and the conjunctival reflex returned after six hours, though consciousness was not complete until the next day.

APPARATUS FOR THE INHALATION OF OXYGEN. F. W. Forbes Ross² suggests an appliance to carry the inhalation tubes to the mouth or the nose without the need for a nasal plug for holding the tube to the mouth. It consists essentially of a plate fastened to the forehead by a head-band and carrying a supply tube, connected with four branch tubes which pass vertically in front of the bridge of the nose, to the nostrils and to the sides of the mouth respectively. The tubes bend back into the nostrils without plugging them.

NEW OZONE INHALERS are presented to us by Cyrus Edson and by Scheppegret.³

Liquid Air. This is advocated in the *Medical News* as an almost unlimited source of useful applications. A quart of it placed in a ventilator would furnish pure air for a day, and fever patients could be kept in rooms cooled to zero even in the tropics, rendering the nursing of yellow fever perfectly safe and at the same time comforting the patient. This prospect is somewhat sanguine; thus far the difficulty of preserving and handling compressed air seems to be an insuperable obstacle to its clinical use.

Caisson Disease. No fresh light has been thrown upon the pathology or treatment of this affection, but it is sufficiently important to warrant a brief reference to the following papers. Thomas Oliver's⁴ instructive lecture on compressed-air illness refers to James Hunter's Edinburgh

¹ British Medical Journal, May 13, 1899.

² Lancet, May 13, 1899.

³ Journal American Medical Association, October 29 and December 3, 1898.

⁴ Lancet, February 11, 1899.

thesis and to Andrew Smith's monograph, and deals with the various aspects of the affection and with its etiology and treatment :

"Three theories have been brought forward to explain compressed-air illness : (1) Carbonic-acid poisoning, (2) mechanical congestion of internal organs, (3) and increased solution by the blood of the gases met with in the compressed air and the liberation of these gases during decompression. We have no proof that there is carbonic-acid poisoning, for it ought to occur when the men are in the caisson and not after they emerge from it. Dr. Andrew Smith, of New York, regards the illness as the result of mechanical congestion, especially of the brain. In several of the workmen who have died the membranes of the brain have been found deeply congested. The third theory has met with the greatest acceptance. Paul Bert has shown that when animals were exposed to compressed air and were rapidly decompressed, several of them died suddenly, and free gas was found in the blood and in the right side of the heart. In those that were paralyzed bubbles of free gas were observed in the spinal bloodvessels, and there was in addition subcutaneous emphysema. As to the nature of the gas found in the blood and tissues I am unable to speak with certainty. We are told that carbonic acid is forty-five times more soluble than oxygen, but we have no positive proof that this is the gas. It might be nitrogen.

"As to preventive treatment, it is necessary that a sufficient length of time should be passed in the lock, both in compression and decompression ; one minute for every three pounds of pressure is considered an average period, but the length of time might with advantage be increased ; diffusion is slow. The atmosphere in the caisson should be kept as pure as possible, and men should not work in the cylinders longer than from two to four hours at a stretch. Only healthy men should be employed. The curative part of the treatment consists in relieving pains in the muscles when severe by means of morphine ; when there is collapse in the application of heat to the extremities, stimulants carefully administered, and a hypodermatic injection of strychnine when the breathing is impaired. Ergot is recommended, with the view of relieving internal congestion, and where the symptoms develop quickly and are severe good effects have been obtained by gradually recompressing the patient."

The Physical Effects of Compressed Air are also studied in a comprehensive paper by Frederick T. Lewis,¹ of Cambridgeport, with special reference to caisson disease. The two chief theories which he thinks are not contradictory and may be combined, although they are usually represented as conflicting, assume, respectively, an increased absorption of

¹ Boston Medical and Surgical Journal, October 6, 1898.

gases by the blood or a mechanical disturbance of the circulation by pressure. The gas-bubble theory seems to him to represent the greater probability ; but both agencies may have a share in the symptoms.

DISEASES OF THE PLEURA.

The Röntgen Rays in the Diagnosis of Affections of the Pleura.

Bouchard and Claude report that the shadows of *thickened pleural membranes* are less dark than those due to fluid, but that they are permanent. There may, however, be no means of distinguishing them from the opacity produced by pneumonic consolidations.

The dense shadow of a *fluid effusion*, occupying the base, veils the diaphragm and merges into the darkness of the abdominal area. Its upper boundary is curved, or slants from the axillary line to the spine, as was long ago determined by percussion by Damoiseau. A further element in its diagnosis is the variability from day to day of the shadow of the common basie effusion or of the more central shadow of an encysted interlobar effusion.

In *pneumothorax* they describe an abnormal transparency of the greater part of the air-containing pleura, in which the collapsed lung alone casts a shadow, and a depression of the curve of the diaphragm. When a serous or purulent effusion accompanies the pneumothorax the opacity due to the fluid changes its position with each change in posture, always occupying the dependent part.

The Study of Intrapleural Tension. This is a labor of love with Samuel West.¹ Though largely theoretical, it leads him to make suggestions with a clinical bearing.

A. Intrapleural Pressure in Pneumothorax. The varying conditions associated with the presence or the absence of an external wound or of an opening, which may be valvular or non-valvular, at the surface of the lung, are analyzed, and West points out that in pneumothorax the pressure conditions during inspiration and expiration require to be considered separately.

(a) *The Inspiratory Pressure.* In the early stages, as air enters the pleura, the pressure is equal to that of the atmosphere on deep inspiration, and it tends to remain about equal with it. If it becomes permanently raised above that of the atmosphere the presence of fluid is indicated.

(b) *The Expiratory Pressure* of pneumothorax is always positive in the early stages. The collapse of the lung is in great part due to the compression which this exercises, and the displacement of the mediastinum is also assisted, though not produced, in this way.

¹ Royal Medical and Chirurgical Society Trans., vol. lxxxi.

(c) *The Respiratory Oscillation* is the difference between the inspiratory and the expiratory pressure. This tends to be reduced, since the affected pleura is in the position of maximum inspiratory distention, while, on the other side, for various reasons, including the reduced elasticity of the sound lung, the expiratory excursion is diminished. Thus the respiratory oscillation, as a whole, may be considerably below the normal.

B. *Intrapleural Pressure in Pleural Effusion.* From a careful analysis of his observations, West is led to the conclusion that the intrapleural pressures in serous effusions are not so simple as they are thought to be, and that the whole subject requires a great deal of investigation. The respiratory oscillation is generally reduced in serous effusions and may be completely absent. The action of the lymphatic pump must greatly suffer in consequence.

C. *The Intrapleural Pressure in Empyema* is always positive and sometimes considerably raised, while the respiratory oscillation is practically absent. This high tension is an important fact. It points to the formation of abscess as a vital process independent of the simple laws of gravitation and of pressures which apply to the simple exudations. As I ventured to put it once to a learned confrère, in reply to his question, "What was the cause which led to the pressure of an empyema being higher than that of a serous effusion?" "It is the leucocyte." By its vital energy the leucocyte can struggle against the pressure which would prevent further extravasation of fluid.

Chronic Changes and New Growths. An unusual condition of *thickening of the pleura* was described by Cecil F. Beadles in a female lunatic, aged seventy-five years. The thickening occurred in laminated nodules analogous to those sometimes seen over the spleen.¹

A PRIMARY MYXOSARCOMA OF THE PLEURA was exhibited by Percy Kidd and S. H. Habershon. An enormous mass entirely filled the left chest, extending as far as the right midclavicular line, the heart lying entirely to the right of the sternum. The bronchial and mediastinal glands were not enlarged.²

Pleurisy. Of late years pleurisy, which was formerly viewed almost exclusively as the result of chill, has been traced in the majority of cases to some form of infection—most commonly to tubercle, very frequently to rheumatism, and in many instances to various septic influences. Among the occasional sources of infection special mention may be made of gonorrhœa and of typhoid fever.

PLEURITIS GONORRHOICA has occurred under the observation of J. Rodis-Jeinsky,³ of Cedar Rapids, Iowa, in two cases, and a similar

¹ Transactions Pathological Society of London, vol. xlix.

² Journal American Medical Association, February 4, 1899.

³ Ibid.

case of secondary pleurisy, as the result of chronic gonorrhœa, is referred to by Aug. Fisher, of Chicago. Cases such as these bring the terms "inflammation" and "infection" very closely together.

TYPHOID PLEURISY. There are three forms of typhoid pleurisy—the sero-fibrinous, the hemorrhagic, and the purulent. Two cases are given by Achard,¹ one of which was purulent. In the treatment of typhoid empyema, Achard recommends delay until the intestinal ulcers are healed and the patient stronger. He asks why the typhoid bacillus should set up suppuration in some cases and not in others. In experimental inoculation of the pleura this is also found to be the case, and the same applies to inoculation with the colon bacillus, whereas both streptococci and staphylococci, usually pyogenic, may be met with in non-suppurative lesions.

The question raised by Achard, as to whether the surgical relief of an empyema should be delayed until convalescence, is one which would be best decided on the merits of individual cases. In itself the delay is undesirable, but the patient's condition may be such as to forbid immediate interference. In the absence of strong contraindications I should recommend simple aspiration of the pus, to be repeated, if necessary, at intervals of a few days. This would afford temporary relief, and would enable the surgeon to postpone safely the more thorough treatment by incision and drainage.

SENILE PLEURISY has been made a special subject of study by Maurice Lemoine.² The peculiarities of this group seem to be clinical rather than pathological, and among them he brings forward the feature of latency, which is common. The effusion is usually serous or sero-fibrinous, rarely purulent. Most often it is a complication of renal disease rather than a primary affection. Four clinical types are described.

Pleural Effusion. In connection with the etiology and the general pathology of this subject, Lazarus-Barlow's³ paper on "Pleural Irritation and Pleurisy," read before the Edinburgh meeting, raises important and varied questions which cannot be discussed here, but which should be studied in the original.

Besson⁴ dwells upon the harmful effects of a compression of the heart by pleural effusion when it is the seat of valvular disease. This points to the necessity for early tapping.

With reference to the *hemorrhagic pleural and peritoneal effusions* which are sometimes observed in the course of hepatic cirrhosis, and

¹ La Semaine Médicale, October 19, 1898.

² Journal de Médecine, July 25, 1898.

³ British Medical Journal, September 3, 1898.

⁴ Journal American Medical Association, January 21; Journal de Sci. Med. de Lille, September-October, 1898.

which they have studied, Barjon and Henry¹ find that right-sided pleural effusions have a special tendency to be set up by cirrhosis, and are sometimes hemorrhagic. The hemorrhagic character of an effusion is most often due to tubercle, but in some instances it may be the result of hemorrhage into the serous sac at a previous tapping.

THE TREATMENT OF SEROUS PLEURAL EFFUSIONS. The practice of aspirating, and of aspirating early, in serous pleurisy has been steadily gaining ground, but the question as to its desirability and efficacy has been reopened, and fresh suggestions have been made in two opposite directions—that of complete avoidance of surgical interference, even in the shape of the aspirator, and that of a more radical surgical treatment by incision and drainage. Talamon² advocates the non-surgical treatment, which he believes to be more successful in securing a complete recovery, and others have probably followed him in reverting to simple medication in the milder cases; while Samuel West has recommended for special cases, and carried out, the bolder surgical measure.

Paracentesis. The treatment by paracentesis is discussed by J. Lindsay Steven³ in connection with a series of cases. "Never," he says, "in acute extensive pleuritic effusion with great dyspnœa on exertion hesitate to perform paracentesis immediately." He believes that removal of the fluid in ordinary cases of pleurisy hastens recovery. It does not, however, always prevent a decided retraction of the side. Steven has only once seen profuse serous expectoration following the operation. The occasional puncture of the lung is not likely to be followed by much injury to the patient. He mentions an instance in which extensive subcutaneous emphysema was produced by the needle having accidentally been attached to the wrong tube of the aspirator. The emphysema slowly disappeared and so did the fluid. Steven has never used an aspirator since.

Incision and Drainage was discussed by West before the Clinical Society (February 11, 1898), in connection with a right serous pleurisy of fifteen months' standing occurring in a woman, aged fifty-nine years. The repeated paracentesis having failed to permanently empty the chest, an incision was made, without resection of ribs, in the sixth and seventh space at the axillary base, from which a large quantity of serous fluid escaped. A drainage tube was introduced. A few days later pus began to be discharged, and, although the patient made a good recovery in other respects, a long sinus extending in the direction of the spine remained along the track of the drainage tube as late as the date of the report, thirteen months after the operation. The patient had by this time

¹ *Lyon Médicale*, June 12, 1898.

² *La Médecine Moderne*, March 9, 1898.

³ *International Clinics*, seventh series, vol. iv.

returned to light work, but was still wearing a tube two and a half inches long. Tubercle bacilli were found in the pus.

Various points of interest are brought out by the case and by an analogous case, also tuberculous, of persistent serous effusion of more than twelve months' duration, in a young woman, which was relieved by incision: (1) Serous effusions need not change their character for fifteen or twenty months unless fresh infection be introduced accidentally. (2) Though the lung may have been long compressed, it need not be adherent, and it is not incapable of expansion. In both cases the lung expanded at once, and in the present case, a few days after operation, the lung was in contact with the entire chest-wall except in the vicinity of the tube. Similarly in empyema of long duration the lung frequently fills out at once, and the pleural cavity is obliterated within a time which is much too short for the process of granulation of the pleura from the bottom. (3) Excision of ribs is not essential, and West regards it as a passing fashion in surgery. (4) The view has been largely held that in tuberculous disease of the lung compression by an effusion is protective. This is an utterly erroneous theory, and West strongly protests against it, first, because it rests upon no evidence; secondly, because, contrary to that theory, recent tubercles may be found in compressed lung; and, thirdly, because daily experience teaches that removal of the fluid does not in any way lead to progress in the tuberculous process of the lung. West points out that this theory is less prominently advocated nowadays in relation to serous or pleural effusions, but that it is still regarded as an objection to the treatment of hydrothorax or pyopneumothorax on the same principles as empyema.

Incision and drainage for the relief of simple serous effusion is a procedure apparently so disproportionate to the gravity of the affection that its adoption should not be countenanced in any ordinary case. Exceptional instances occur in which the usual methods are ineffectual and some form of drastic treatment is called for. Suppuration within the pleura and a chronic thoracic fistula are likely consequences which most of us would be slow to invite. If the establishment of suppuration is curative, and this is by no means to be rejected *à priori* as impossible, the old-fashioned seton would be a less severe method. Before resorting to incision, I think we should in every case give a trial to the "artificial pneumothorax" method, which can be readily carried out as a simple modification of the ordinary paracentesis, the fluid being allowed to escape by siphonage, while sterilized air or nitrogen is admitted to replace it and the puncture carefully closed. It is not unlikely that in most cases sufficient stimulation would be set up in the pleural membrane to reverse the direction of its currents, and that the lung would re-expand as the gas became absorbed. I would advocate a repetition of

this operation again and again with different gases if fluid were to reaccumulate, before proceeding to the more severe measure of incision and drainage, which seems to be very undesirable if it can be possibly avoided.

THE CURATIVE EFFECT OF GASEOUS INJECTIONS into the pleural cavity has been attested by the few observers who have tried it. Although without due care its performance is not free from risk, the method has probably a future before it. Hippocrates seems to have long forestalled the introduction of this method of treatment by contemporary physicians, such as Carlo Forlanini and Dr. Stuart Tidey.¹ J. F. E. Colgan,² of Philadelphia, provides us with a quotation from Chapter XXIII, of the second book on *Diseases*, which he believes indicates that Hippocrates had used inflations of the pleura in cases of chest wounds and after the operation for empyema for the treatment of the collapsed lung.

Brial's³ interesting collection of cases shows that the beneficial effect of an introduction of air is not limited to the pleural sac. In tubercular peritonitis it has been known to arrest the disease, and clinical evidence is now adduced to show that even the ascites of cirrhosis may be controlled by the injection of a moderate amount of sterilized air. The method has failed in the case of hydrocele. Incidentally to this subject may be mentioned H. A. Hare's case of oxygen injection for ascites. Two quarts of the gas were injected, the patient complaining bitterly of pain, apparently from pressure upon the diaphragm. No benefit was obtained from this treatment, and the ascites recurred with its usual rapidity.⁴

Empyema. Our knowledge of the etiology and of the pathology of empyema is steadily advancing, but it has not received any additions of first-rate importance. Cestan's⁵ exhaustive work is a valuable contribution to the literature of empyema, both acute and chronic, in which bacteriological questions are duly considered, but chief stress is laid upon the subject of treatment and of operation.

N. Senn's experience in Camp Thomas forms the basis of a general view of the practical aspects of the pathology and of the treatment of empyema. Fraenkel's pneumococcus and Friedländer's diplobacillus possess feeble intrinsic pyogenic property, and suppurative pleuritis set up during a pneumonia usually results from a secondary or mixed infection with pus microbes. Often it occurs at the time of the crisis or a few days later. Thus while the lung may get well the pleura may

¹ British Medical Journal, October 22, 1898.

² Medical News, December 31, 1898.

³ International Clinics, seventh series, vol. iv.

⁴ Thèse de Bordeaux, 1898.

⁵ La Thérapeutique des Empyèmes. Paris, George Steinheil, 1898. British Medical Journal, September 10, 1898.

become infected, as though more susceptible than the pulmonary tissues to pyogenic infection. Semm attributes an etiological share in the production of pneumonia and of pleurisy to dust, which renders the epithelial layer of the bronchi more permeable to the entrance of microbes.

TREATMENT. Semm's¹ views as to the surgery of empyema differ but little from those which have seemed to me to be the most successful in practice. He favors a preliminary aspiration, a free incision, to be made under an anæsthetic, a slow evacuation of the chest, and tubular drainage without irrigation at first. He often resorts to free irrigation of the pleura during the subsequent treatment, and uses the double drain (the patient being made to lie on the sound side), the fluid escaping through the second tube as soon as the cavity is full.

Resection of Ribs as a primary procedure is losing some of its popularity. Various observers, and among them Samuel West, believe that it is often superfluous. Thus Sinclair Tousey's² two cases (in boys) of chronic empyema with perforation of the lung and of the thoracic wall were successfully incised and drained without resection, and Edmund Andrews,³ of Chicago, in his paper on "Rib Resection in Empyema," insists that resection is too often performed and but rarely needed. He is in favor of irrigation, and in its performance he has found Joseph L. Hancock's double empyema tube a convenience. His own single flanged tube can be made to close the pleura air-tight, and if the plug is introduced into it, after several expiratory efforts at the end of forced inspiration, the surface of the lung is kept under suctional influence for hours.

Irrigation is another subject upon which opinions are still divided. There is no question that cases do exceedingly well without it, and, in view of the serious complications with which it is sometimes attended, its use might wisely be restricted to cases with special indications.

The *Lancet*⁴ gives a useful retrospect of some of the fatalities which have been published, with comments as to the possible causes of these unexplained accidents. Janeway⁵ relates the case of a man who had been operated upon for sacculated empyema three and a half months previously. One day, after introducing a wineglassful of the peroxide of hydrogen injection, he lost consciousness for a second and became a pale greenish color. On recovery his right leg remained numb and powerless for twenty-five minutes. Three days later a similar attack occurred, in which he lost power in the neck, the head drooped, and there was serious embarrassment of breathing.

¹ Journal American Medical Association, December 24.

² New York Medical Journal, March 4, 1899.

³ Journal American Medical Association, March 1, 1899.

⁴ November 26, 1898.

⁵ American Journal of the Medical Sciences, October, 1898.

Janeway adopts the embolic theory and the view that the emboli are air or gas.

Irrigation by Submersion. This has been referred to in Vol. I.

Valvular Drainage Tubes have been devised from time to time for empyema, but they have not found favor with surgeons, who generally regard a free discharging outlet, kept aseptic, as the great indication. The analogous varieties suggested by Hutton¹ and by E. A. C. Baylor² are good of their kind. In Baylor's apparatus a branch tube, kept habitually ligatured, enables the external portion of the tube and its terminal valve to be frequently flushed with hot boric acid solution. Baylor claims for his method an efficient drainage, a complete exclusion of air, and an inspiratory negative pressure not otherwise to be secured.

Van Santvoord³ has devised an improvement upon Hutton's apparatus for empyema which has given good results in his hands. In one case the discharge ceased and the lung was fully expanded four days after the operation.

DOUBLE EMPYEMA. Where empyema exists on both sides of the chest the question arises as to whether they should both be operated upon at one sitting or at an interval of time. This point is discussed by Randall,⁴ who in one of his cases opened both empyemata at the same operation. He refers to a similar case, and gives a short bibliography.

The whole subject of the surgical treatment of the pleura is carefully dealt with in Murphy's exhaustive Denver address on pulmonary surgery.

Pneumothorax, Hydropneumothorax, and Pyopneumothorax.

PNEUMOTHORAX DUE TO BACTERIUM COLI. The case reported by Richard May and Adolf Gebhart⁵ was that of a laborer, aged forty-three years, who had suffered from pleurisy and pericarditis after being stabbed. Pneumothorax developed and was aspirated. The gas withdrawn burned with a good flame, and was found to contain hydrogen, nitrogen, and carbon dioxide. The production of gas was traced to the bacterium coli.

PYOPNEUMOTHORAX. Kienböck's⁶ X-ray observations on pyopneumothorax are interesting, in connection with the pulsations which were visible on the fluorescent screen. Some of the oscillations were synchronous with the heart-beat, others were due to the shaking of the floor.

THE OPERATIVE TREATMENT OF PNEUMOTHORAX is seriously dis-

¹ British Medical Journal, Oct. 29, 1898.

² Ibid., Jan. 21, 1899.

³ Medical Record, August 27, 1898.

⁴ British Medical Journal, November 26, 1898.

⁵ Deutsche Archiv f. klin. Med., 1898, lxi., 3 u. 4.

⁶ Wien. klin. Wochenschrift, 1898, No. 22; American Journal of the Medical Sciences, September, 1898.

cussed by Samuel West¹ in connection with a case of pyopneumothorax of several months' duration cured by free incision.

The views which occur to me on this point of treatment are analogous to those expressed under the heading of Incision and Drainage for Serous Effusions in the Pleura (see p. 31). When pus has collected in the pleura its removal is indicated. But the risk of inducing suppuration by incision and drainage, in a pleura which previously contained serous fluid only, is hardly justifiable before we have used the less severe method by simple evacuation of the fluid and its replacement by aseptic air or by nitrogen.

DISEASES OF THE AIR PASSAGES AND LUNGS.

Malformations of the Chest and of the Lungs. CONGENITAL ABSENCE OF BOTH CLAVICLES. This thoracic deformity of some medical interest has been met with by two observers, G. Schorstein and George Carpenter. The two cases, illustrated by skiagrams, are reported in the same number of the *Lancet*.² In describing his case, Carpenter states that various deformities of the clavicles occurred in five other members of the same family.

CONGENITAL ABSENCE OF ONE LUNG. Great atrophy of one lung, with complete atelectasis, is sometimes seen in extreme kyphosis, and this may be regarded as secondary to the thoracic deformity. The congenital absence, or, more strictly, the arrested development of one lung, belongs to a different group, and is not dependent upon malformation of the thorax. Two cases are reported under the name of "Pulmonary Atelectasis" in the *Lancet*.³ In both cases the left lung was atrophied; but in another case the right was the missing lung, and the heart was displaced into the right chest. Reference is also made to two cases reported by Gruber.⁴

Yet more remarkable and probably unique is the RHABDOMYOMA REPLACING THE LEFT LUNG, which is described by C. Helbing.⁵ This malformation was found in a man, aged twenty-three years, whose symptoms had been thoracic pain and dyspnoea, with complete transference of the heart into the right side of the chest, while the diaphragm was depressed and was subsequently found to be convex toward the abdomen. The left side of the chest was completely dull, with absence of vocal fremitus, and insufficient entry of air, except at the root. Six litres of blood-stained fluid had been withdrawn at intervals. The autopsy

¹ Transactions Medical Society of London, vol. xxi.

² January 7, 1899.

³ January 14, 1899, and January 28, 1899.

⁴ British Medical Journal, December 12, 1885.

⁵ Centralbl. f. Path., 1898, No. 11-12.

showed complete absence of the left lung. The large mass (weighing sixteen pounds) which replaced it was absolutely airless and resembled fibrin, with interspersed necrotic patches and a few translucent nodules, which proved to be cartilaginous, and contained also elastic fibrils, with a few spots of calcification. Under the microscope the mass was found to consist of small lymphoid cells with scattered giant cells; fibrous bands traversed it in every direction, and fine strands of delicate embryonic striped muscle fibres were scattered through the mass. There were also a few cysts lined with cubical epithelium, and a single layer of pleural epithelium covered the outer surface of the mass. The probable explanation was congenital defect of the left lung and its replacement, not by fluid but by hyperplasia from the embryonic residue of the absent lung.

CONGENITAL DIAPHRAGMATIC HERNIA, CAUSING DEATH DURING PREGNANCY. The case, related by Keim, Rosenthal, and Huguier,¹ was that of a woman in the fifth month of her first pregnancy. Death occurred from syncope after dyspnoea, pneumothorax, and black vomit. Part of the stomach and intestine were found lying in the left pleural cavity. The congenital hernia of the diaphragm seems to have given rise to no symptoms until it was submitted to the pressure of an unusually large gravid uterus.

This reminds us of Hintz's² remarkable case of double congenital diaphragmatic hernia, in which the child died immediately after birth from compression of the lungs, due to the rise of the abdominal contents through a wide hernia into the left pleura and through a smaller opening into the right also. The heart was in this case pushed to the right.

Hernia of the Lung in the Suprasternal Region. An instance of this has come under Potain's³ notice, the first, it seems, of this kind; but forty cases in all have been recorded. The surgical treatment adopted by Tuffier, of suturing the pleura in stages, could not have been carried out in this instance.

Traumatic Rupture of the Diaphragm. A case in a woman, who survived two or three days, is reported by Matthew Porter,⁴ of Cincinnati, the cause being a fall down a flight of steps. The diaphragm was ruptured at the œsophageal opening to the extent of one and a half inches. The stomach, the transverse colon, and mesentery had escaped into the left pleura. The mesentery and colon were gangrenous.

Diphtherial Membranous Tracheitis in the Adult. In Ewart and Hunt's⁵ case of tracheal diphtheria in the adult, with recovery, the chief

¹ Progrès Médical, June 4, 1898.

² Centralbl. f. Gynäk., April 16, 1898, No. 15.

³ La Semaine Méd., September 28, 1898.

⁴ New York Medical Journal, March 18, 1899.

⁵ Harveian Society, February 2, 1899; British Medical Journal, February 11, 1899.

interest lay in the expectoration of tubular casts of the trachea, in the obstruction of the right bronchus by membrane, and in the absence of the croupy cough and tracheal stridor which are observed in the infantile croup.

MEMBRANOUS TRACHEITIS AND LARYNGITIS; NO DIPHTHERITIC BACILLI. In this case, reported by Grimes,¹ that of a boy, aged four and three-fourths years, recovering from measles, bacteriological examinations were made by Slater on the first day, and on three other occasions, but though there were numerous bacilli, that of diphtheria was always absent. There was marked stridor and great sucking in at the episternal notch and over the lower thorax during inspiration, but nothing abnormal was to be seen. Tracheotomy had to be performed, and immediately the tube was inserted a large piece of grayish-yellow tough membrane was coughed up. Ewart's method of introducing creosoted oil (1 in 20) into the trachea was at once adopted. Five minims every two hours had the effect of softening the membrane, thus enabling the child to cough it up more easily, and a fit of coughing was usually brought on immediately the oil reached the trachea. After twenty-four hours the dose was altered to ten minims every four hours. In two days the membrane became quite soft and mucopurulent, and the tube was finally removed on the twelfth day.

Foreign Bodies in the Bronchi and Lungs.² The effects of the obstruction set up by foreign bodies in the bronchi are described by Sevestre³ as early and late—viz., collapse with collateral emphysema on the one hand, pneumonic changes on the other, with disintegration or formation of abscess. The bronchiectasis which is apt to occur is usually of the cylindrical type.

SPONTANEOUS EXPECTORATION OF FOREIGN BODY FROM THE LUNG. The special points of interest in Barbat's case were the delay of one week which occurred in the development of respiratory distress, the hemorrhages which occurred every year for fourteen years, and the employment of X-rays, with the result that dermatitis was set up. The patient seemed to improve and was able to lie on his left side, which he had not ventured to do for a long time. The foreign body, a cherry stone which had dropped into the trachea and remained there, was ultimately expelled during a sudden fit of coughing, included in a solid mass about as large as a small hazel-nut. Barbat⁴ believes that the exposure to the X-rays, and particularly the skin-burn which resulted, exerted some beneficial action in the case.

C. E. Coon⁵ reports a case of bronchitis and pneumonia following upon

¹ Lancet, August 13, 1898.

² See also "Gangrene of the Lung."

³ British Medical Journal, January 21, 1899.

⁴ Medical Record, July 30, 1898.

⁵ New York Medical Journal, February 25, 1899.

inhalation of a huckleberry. This was expectorated eleven days after having been inhaled. The patient recovered.

SURGICAL OPERATIONS FOR THE REMOVAL OF FOREIGN BODY. A. A. Lenden¹ gives the clinical history of a case of impaction of a stud in the air passages in a boy aged seven years. Pus having been ultimately found by exploratory puncture, a piece of the fourth rib was excised in the right axillary region, but no pus could be found on puncturing the lung. Pus was encountered on detaching the pleura with the finger, which reached the pericardial sac in the nipple line, and the stud, as it was thought, could be felt in the thickness of the lung tissue. The stud was suddenly expectorated after a violent cough soon after the operation had been concluded.

A. J. Horn,² of Denver, relates the cure, by inferior tracheotomy, of a patient, aged twelve years, who had inhaled a pin which had become fixed at the bifurcation, projecting into the left bronchus.

POSTERIOR THORACOTOMY FOR FOREIGN BODY IN THE RIGHT BRONCHUS. Farquhar Curtis³ seems to have been the first to put Bryant's suggestion into practice. About three inches of the fourth, fifth, and sixth ribs were resected subperiosteally from the tuberosities outward. The bronchus was easily reached, but the operation was suspended, owing to failure of the pulse. Next day it was renewed. The foreign body was felt, but again the patient's condition interrupted the proceedings. He died of pneumonia forty-eight hours later. Curtiss, in a future case, would prefer to cut down directly on the body through the lung tissue after stitching the parietal and visceral pleuræ.

Bronchiectasis. Whitney's⁴ unusual case of bronchiectasis was that of a laborer, aged forty-four years, who died of hæmoptysis some months after the sudden development, without any previous cough whatever, of fetid expectoration and signs of excavation, with subsequent quiescence, and later on implication of the previously sound side.

"Corresponding to this clinical course, the post-mortem showed a large, quiescent bronchiectasis on the left, and on the right numerous bronchial dilatations in a state of active catarrhal inflammation.

"The chief lessons to be drawn from this case are, first, that bronchiectasis may be wholly latent, and, second, that the symptoms which it often produces—chiefly cough and abundant fetid expectoration—are susceptible of spontaneous cure."

We are indebted to J. B. Murphy's oration on the "Surgery of the

¹ Intercolonial Medical Journal of Australasia, 1898, No. 3, and American Journal of the Medical Sciences, September, 1898.

² Journal American Medical Association, July 16, 1898.

³ Annals of Surgery, November, 1898; Edinburgh Medical Journal, February, 1899.

⁴ Boston Medical and Surgical Journal, December 22, 1898.

Lung" for a valuable collection of forty-nine histories of cases operated upon for the relief of bronchiectasis.

Syphilitic Stenosis of Both Bronchi. This has been reported in three cases by Rolleston and Cyril Ogle, who consider that such cases may be more frequent than usually supposed, and perhaps amenable to treatment, though iodide of potassium, which might set up increased secretion and accumulation below the stricture and do harm, might need to be counteracted by a concurrent administration of belladonna.

Ulceration of a Caseous Gland into the Air Passages. This is not an event of great rarity, nor one necessarily fatal. In the case reported by Arthur Voelcker, a girl, aged five years, died from sudden asphyxia. The right bronchus was perforated by ulceration, and a plug of caseous matter blocked the glottis.

In Cyril Ogle's¹ case, a boy, aged five years, the ulcerated glandular mass projected into the trachea and fatally obstructed the entry of air into both bronchi.

PULMONARY AFFECTIONS.

Neoplasms and Tumors of the Lung. Much clinical interest attaches to S. H. Habershon's case of PRIMARY SARCOMA OF THE LEFT LUNG, which simulated empyema and produced great contraction of the left lung and side. The chest presented all the signs of containing fluid and was twice tapped. No further operation was attempted. The patient, a man, aged seventy-eight years, died of exhaustion. The œsophagus and the bronchus had undergone ulceration.

HYDATID OF LUNG SUCCESSFULLY OPERATED UPON. Betham Robinson's² patient, a boy, aged six years, was successfully operated upon for hydatid of the liver on June 2d. On August 15th the upper lobe of the right lung was operated upon, after skiagraphy. The preliminary skiagram had shown an opacity so dense as to obliterate the rib shadow. A portion of the second rib was excised and the cyst, about as large as an orange, without any daughter cysts, was secured and emptied of its contents and subsequently removed by the finger. A large India-rubber drain was introduced; the pyrexia ceased after the tenth day, when a gauze drain was substituted, the subsequent dressings involving the insufflation of equal parts of aristol and boric acid. The deep wound had healed on the twenty-second day.

Penrose and Kellock's³ case of hydatid cyst of the lung in a child has various aspects of interest, among others discharge of some of the pus

¹ Transactions of the Pathological Society of London, vol. xlix.

² Clinical Society of London; British Medical Journal, March 18, 1899.

³ Lancet, October 15, 1898.

per anum. An aërial fistula followed the operation, and, as usual, closure was delayed thereby. Reference is made to the rarity of pulmonary hydatid in childhood.

A case of *ECHINOCOCCUS OF THE LUNG* was brought before the Denver meeting of the American Medical Association by Carl Beck.¹ It had been successfully operated upon by him in November, 1897, and was presented before a local medical society of New York.

PULMONARY ACTINOMYCOSIS is extensively described by Sabrazès and Cabanès.² Its primary and secondary forms constitute about 12 to 15 per cent. of all cases. It is essentially ulcerative and presents three stages: broncho-pulmonary, pleural, and fistulous. An acute beginning and a rapid progress, with a duration of six months, are sometimes seen; more often it begins insidiously and lasts for years, the pulmonary complications giving no signs for a long time.

The primary lesion may be in the œsophagus, posterior mediastinum, or even in the abdomen, more rarely in the trachea or the cervical cellular tissue. Again, a primary bronchopleural actinomycosis may be present. The lung shows on section small abscess cavities, and large tracts of fibrous tissue, not unlike cascating tubercle, seem to spread from the vessels. In the cavity wall small yellow bodies may be seen in great numbers, the nodules of actinomyces. Tubercle is a rare association. Very rarely the mycelium has no club-like swellings or yellow grains.

As a rule, the apex is unaffected and the lateral and posterior portions of the lung are affected. The process spreads to the pleura and small subpleural abscesses are formed.

The symptoms are incessant cough, loss of weight, and much pain. The sputa are very fetid, or milky white from contained fatty cells, or bloody or rusty. The characteristic organisms are found, but there is no elastic tissue, owing to the early and extensive fibrosis.

The disease may implicate the pericardium, the abdomen, and other organs and tissues, including bone and cartilage, as well as the chest-wall, when an œdematous or else a very hard swelling may form at the surface, which yields pus with yellow grains on aspiration, rarely simple fluid. Internal treatment by iodide of potassium and eucalyptus is unsatisfactory; surgical treatment consists in removing the necrotic bone and tissue, scraping and even cauterizing the surface repeatedly; this plan may prove successful if applied persistently.

Karowski, before the Berlin Medical Society, described two forms of actinomycosis of the lung: (1) A slighter or catarrhal form, where the

¹ Medical Record, June 18, 1898.

² Revue de Medecin, January 10, 1899; Epit. British Medical Journal, April 8, 1899.

³ Lancet, March 26, 1898.

germs settle in the mucous membranes of the bronchi; (2) the worst form, in which peribronchitis is set up and the lung itself is invaded and partly destroyed. In the first, the sputum displays early the characteristic filaments, etc. In the second, the causation may be latent for a while. Symptoms of phthisis ultimately develop and a hemorrhagic effusion may take place into the pleura. Sometimes empyema is set up, and at this stage it may be operated upon and perhaps extirpated successfully. Lastly (3), metastatic deposits may take place in various parts of the body.

The treatise by Poncet and Bérard bears out the conclusions of others, that iodide of potassium is not curative, though it may be regarded as a useful aid to treatment in limiting the disease and as a means of hastening the cure.

The *Semaine Médicale*¹ also refers to Poncet's unfavorable experience. Potassium iodide was ineffectual in 18 out of 20 cases of actinomycosis. The chief indication is operation. Out of 80 recent simple cases 60 were cured by operation, and the iodide played only a secondary part.

V. D. Harris² refers to the paper written by himself in the *Journal of Pathology*, upon a case of actinomycosis of the lung where the liver and spleen were also implicated. The case had been regarded as one of chronic pleurisy with pyæmia. Iodide of potassium was given in large doses without any result.

G. R. Butler³ has found eucalyptus of some use.

A CASE OF GLANDERS, occurring in a painter, aged thirty-seven years, who died on the fourth day after the onset of the severe symptoms, was brought before the London Pathological Society by James Berry.⁴ The patient was suffering from tertiary syphilis at the time. Numerous nodules were scattered over the surface of the body, and superficial ulcerations were found in the mouth, nose, and larynx. Abundant glanders nodules occurred in the lungs, and in these scanty but characteristic bacilli were demonstrated. The spleen contained a single nodule. The other organs were not affected.

Pulmonary Congestion and Œdema are irremediable when they occur at the termination of chronic diseases associated with progressive cardiac weakness. Not quite so hopeless is the congestive œdema which is induced with alarming suddenness by exposure or fatigue in kidney disease, and which is an essential part of the condition sometimes described as renal asthma. I have known it to be relieved repeatedly in the same subject by free venesections, coupled with restorative measures and with

¹ May 14th; Journal American Medical Association, July 23.

² Year-book of Treatment for 1899.

³ New York Medical News, April 34, 1898.

⁴ Transactions, vol. xlix.

the application of heat to the extremities. Churton¹ furnishes us with interesting remarks on the pathology of the more fatal kind mentioned above, and on the relative local distribution of the congestion and of the œdema. He has noticed that œdema is more common in the upper lobes than in the lower in diseases in which pulmonary œdema was the last and fatal event, while the lower lobes contain more blood but less serous exudation. This observation has proved useful in diagnosing the cause of the sudden dyspnoea where acute œdema was suspected. In three such cases the absence of dulness and crepitations in the upper lobes led to the inference that the dyspnoea was not due to œdema but to a temporary paralysis of the diaphragm and of the lower intercostal muscles.

Acute Idiopathic Pulmonary Congestion, or Woillez's Disease.

There is another variety of pulmonary congestion of much less gravity than either of these forms which is described under this title. Carrière² regards it as being due to simple exposure to cold or sometimes to injury, the symptoms ensuing within a few hours. There may be chilliness, but there is no true rigor, as in pneumonia. The cough and the expectoration are slight, and they may be accompanied with pain in the side and later with dyspnoea. The unilateral increase in fulness of the chest, which was pointed out by Woillez, is not constant, but the side affected presents less movement and less resonance, though it is never dull, and it yields crepitant and subcrepitant râles, rarely bronchophony. The affection lasts from two to four and five days. If it should prove fatal, as it occasionally does, simple congestion with œdema is discovered, and staphylococci and sometimes pneumococci of Fraenkel are found in the sputum, and may be recognized in the serum. The treatment is purely symptomatic.

Poulain³ has observed successive attacks of this condition, terminated with asphyxia, in a case where neither cardiac, renal, dyscrasic, nor toxic influences could be traced, but merely bronchitic antecedents.

Pulmonary Infarct. A case of anemic infarcts of the lung is described by L. Freyberger,⁴ in a woman, aged forty-two years, who presented signs of mitral stenosis and who died with gangrene of the nose. The reporter described the condition as one in which, owing to the imperfect supply of blood due to the failing action of the heart, the original local anaemia due to blocking was not succeeded as usual by an overfilling of the pulmonary vessels of the part, so as to give rise to a red infarct.

¹ British Medical Journal, March 18, 1899.

² Revue de Médecine, October, 1898; British Medical Journal, February 4, 1899.

³ La Presse Médicale, Dec. 24, 1898; Journal American Medical Assoc., Feb. 11, 1899.

⁴ Transactions Pathological Society of London, vol. xlix.

Pulmonary Abscess. The most important contributions under this heading are from the pens of J. B. Murphy, of Chicago, and of Godlee. Godlee's¹ lecture on "Pulmonary Abscess" supplies a clinical review of the subject, including the etiology and the varieties of the abscesses, their diagnosis, chiefly from the character of the sputum, their localization by means of exploratory puncture, and their operative treatment. Characteristic cases are given, illustrating the treatment of gangrene and of abscess following pneumonia, of tuberculous and of non-tuberculous abscesses, of suppurating hydatids, and of bronchiectasis. It is noteworthy that of a series of bronchiectatic cases which had been operated upon only one had yielded a thoroughly good result. This agrees with Tuffier's experience, referred to in vol. i., p. 41.

Murphy devotes to the same subject a considerable portion of his oration on the surgery of the lung, and adds to the value of his exhaustive account by appending to it a bibliography of seventy-two cases of abscess treated surgically.

Special mention should be made of W. G. Spencer's² exceptional instance of gaseous abscesses developing in the back, in the right pleura, and in the upper part of the left thigh in an ordinary case of tuberculous excavation of the upper part of the right lung. The abscess in the back might have spread from the lung by way of the ribs, but he believes that the abscess in the right thigh must have been metastatic by way of the circulation.

Galliard³ has had under observation a cold, gaseous abscess of the thoracic wall (which he terms "a pyopneumothorax of necessity"). The usual cause is pulmonary (tubercle, actinomycosis, gangrene), but in this case it was due to a traumatic dorso-axillary empyema. Abscesses of this kind should be opened locally, except where a "total" pneumothorax exists, in which case the pleura should be opened by inferior pleurotomy, as this also relieves the parietal abscess.

The differential diagnosis of pulmonary abscess and of gangrene in its various aspects, and particularly from the surgical stand-point, is considered by Robert H. Babcock. In connection with the diagnosis from hydatid, he reminds us of the occasional occurrence of urticaria during the course of the parasitic affection. When the diagnosis has been arrived at, the further question arises as to whether the case is suitable for operation. This, however, and the details of any operative measures belong to the domain of surgery.

Henry Elsner,⁴ of Syracuse, reports three cases of abscess of the lung,

¹ British Medical Journal, January 21, 1899.

² Clinical Society, February 10, 1899; British Medical Journal, February 18, 1899.

³ La Semaine Médicale, Feb. 8, 1899; Journal American Medical Assoc., March 4, 1899.

⁴ Medical News, March 25, 1899.

two of which were due to pneumococcic and staphylococcic infection, all successfully operated upon, though the third patient died subsequently of tubercular meningitis. The abscesses were *subpleural*, as described by Bushnell. These are apt to be overlooked. Elsner has diagnosed abscess of the lungs three times in 150 cases of pneumonia, and this frequency is yet greater, according to Sello, who reports 11 abscesses in 750 cases, a percentage of about 1.5.

Pulmonary Gangrene. The cases recorded during the last twelve months illustrate some of the varied modes of origin of gangrene of the lung. In one of Byram Bramwell's¹ two cases it was due to gastric perforation, and complete recovery was attained by allowing the stomach physiological rest. Argyll-Robertson² regards his own case as one similar to that of Byram Bramwell,³ and as having been based upon some infection arising in the abdomen.

The obstruction of a large bronchus is another well-known cause, and this is illustrated by the clinical history, reported by Warrack,⁴ of a woman, aged twenty-six years, in whom the impaction of a tooth in the left bronchus led, in sixteen days, to an unusually rapid gangrene of the entire left lung, which was found at the necropsy to be crepitant and exuded on section a foul turbid fluid. The tooth was tightly wedged in the bronchus.

Devereux's⁵ case occurred in a boy, aged eleven years, and was successfully treated by means of creosote inhalations lasting ten to fifteen minutes and repeated daily. Recovery was complete three months after the onset.

J. B. Murphy, of Chicago, supplies us in his Denver oration with a complete study of the subject and with the condensed histories of ninety-five cases of pulmonary gangrene submitted to operation.

Gangrene of the lung must remain, in spite of surgery, a fatal affection. Spontaneous recovery is not unknown nor even rare. Two conditions are indispensable: (1) A strict limitation of the lesion and (2) a good vitality. These are also essential in operative interference. It is worse than useless to operate upon a diffuse, infiltrating gangrene or in an aged or broken-down subject. Surgery thus restricted to a selected group has achieved encouraging results (75 per cent. recoveries, according to Sonnenberg; 56 recoveries in 96 cases, Murphy), and will probably do yet better in the future. The risks attendant upon the slow process of spontaneous recovery are too great even in the best subjects to furnish equally good returns, and the indication is therefore clear that operation should be discussed, and if possible carried out, early.

¹ British Medical Journal, January 14, 1899.

² Ibid., February 18, 1899.

³ Ibid., February 18, 1899.

⁴ Ibid., January 14, 1899.

⁵ Ibid., March 4, 1899.

PNEUMONIA.

The General Pathology of Pneumonia. Andrew H. Smith's article in the forthcoming volume of the *Twentieth Century Practice of Medicine* is likely to advance both our theory and our practice. He puts into clear light the hitherto unappreciated importance of the well-known anatomical and physiological fact that there are in the lung two circulations, one subservient to nutrition the other to function. This double circulation underlies all the phenomena of pneumonia, and must be recognized in any definition of the disease, as without it the disease, such as we know it, would not exist. It is possible for the function to suffer, and yet nutrition may be kept up. This, he believes, is the case in pneumonia, which he does not regard as an inflammation but as a germ culture, the medium for which is supplied from the functional vessels. This structural immunity in an organ which is the seat of the most virulent disease is characteristic of pneumonia, and it is made obvious to us in the surprising rapidity of the process of recovery when the latter has once set in. For the lung to return to the normal state all that is wanted is a removal of the accumulated *materies morbi*. Smith gives the following description of the natural history of the disease: (1) A predisposing depression, favoring germination of pneumococci; (2) a progressive invasion of colonies settling in the tubes down to the alveolus; (3) an irritative exudation of fibrin, with immigration of leucocytes and escape of red cells from the functional capillaries, this material becoming a special breeding ground; (4) stasis in the functional capillaries, with accumulation of free pneumatic acid in the parenchyma, etc. He admits an overflow of the exudate into neighboring lobules as a means of starting the process in them. The arrest of the growth takes place by exhaustion of the medium and by accumulation of free acid. Up to that time there had been a constant formation and absorption of toxin, but the retrogressive changes in the exudate are probably accompanied with the formation of an antitoxic principle. When the exudate is removed the functional capillary circulation is re-established.

Smith's classification of pneumonia recognized three types—the sthenic the asthenic, and the obstructive.

Early Resolution Viewed as a Danger. We have been accustomed to regard a short attack of pneumonia and a rapid clearing of the lung as much to be desired, and it will be difficult to convince us that we have erred in holding that belief. At any rate, we are indebted to Raven¹ for the novelty of his views on pneumonia and of the special construction which he places upon the clinical history of a case of pneu-

¹ Practitioner, September, 1898.

monia in a boy, aged twelve years, in whom consolidation was rather delayed, but very rapidly disappeared—too rapidly, according to Raven, leaving in its train a long series of glandular and mediastinal suppurations. Raven regards consolidation as a conservative process, not to be interfered with lest worse trouble should be let loose, and as the main channel by which the disease is eliminated. He, therefore, deprecates the use of the ice-pack and of heroic methods aiming at checking the inflammation.

The Bacteriology of Pneumonia. PNEUMOCOCCUS SERUM has been found by Bezançon and Griffon to possess *agglutinative* properties, a point of much diagnostic importance.

The same observers have shown the constant presence of the pneumococcus as a saprophyte on the surface of the tonsil. Tonsillar mucus removed from forty individuals invariably yielded cultures. This is confirmatory of Wetter's¹ positive results in mice inoculated with saliva from subjects free from pneumonia. Pneumococcic septicæmia resulted in twenty of the inoculations, whereas the saliva of individuals suffering from pneumonia proved infectious in 80 per cent. of the inoculations. Similar results have been arrived at by Eyre and Washbourn,² in their study of the varieties and virulence of the pneumococcus. A low virulence was characteristic of a race of pneumococcus which had been living in the mouth, but three other races, which had lived in the body, acquired and retained a high degree of virulence.

PURULENT ARTHRITIS AND FRIEDLAENDER'S PNEUMOBACILLUS. The interest of Emil Boix's³ case lies in the discovery of the pneumobacillus of Friedlaender in a purulent arthritis of the right wrist, following upon a lobar pneumonia, and subsequently complicated by a left empyema. The case ended fatally, as various others in which the pneumococcus of Fraenkel was present. Purulent arthritis as a sequel to pneumonia is of grave prognosis, but Galliard and Morley have put on record a case of recovery.

The diagnosis of STREPTOCOCCUS PNEUMONIA rests, according to Lewin,⁴ upon its long duration (one to two months), its intermittent pyrexia, with rigors and sweatings at the outset of each recrudescence, and the exclusive presence of streptococci in the sputum and in the splenic juice obtained by aspiration of the spleen. In other respects the clinical aspects of the disease agree with those of the bronchopneumonia due to the diplococcus.

PNEUMONIA DUE TO MIXED INFECTION. Rosenthal's⁵ case was that of an apparently infective atypical pneumonia, fatal on the sixth day,

¹ Boston Medical and Surgical Journal, June 9 and 16, 1898.

² Lancet, January 7, 1899.

³ Arch. Gen. de Med., May, 1898.

⁴ Boln. Gaz. Bothnia, 1898, No. 16; New York Medical Journal, January 7, 1899.

⁵ Münch. med. Woch., Oct. 18, 1898; Epitome Brit. Med. Journ., March 18, 1899.

with cerebral symptoms. The right middle and lower lobes were consolidated, and bronchopneumonic centres occurred in the right upper and left lower lobe, together with bronchitis and double pleurisy. There was also slight endocarditis and slight purulent meningitis. Bacteriological examination showed the presence of a few pneumococci, of Friedländer's bacillus, and of the streptococcus, the latter seeming to occupy the interstitial tissue, whereas the pneumobacillus and the pneumococcus were found in the alveoli. A streptococcus was also obtained from the meningeal fluid.

THE BACILLUS CAPSULATIS, in its relation to lobar pneumonia, has been studied by Joseph J. Curry.¹ The conclusion derived from his investigation is that all instances of genuine acute lobar pneumonia are caused by the micrococcus lanceolatus.

THE BACTERIOLOGY OF EPIDEMIC PNEUMONIA IN SOUTH AFRICA. The recent epidemic, which was unusually fatal (60 to 70 per cent. deaths), had raised the suspicion that the South African pneumonia was of a different type from that of the European disease. Kolle,² however, has demonstrated their identity. In 15 necropsies the diplococcus of Fraenkel was found in 11 and the influenza bacillus in 4, and an examination of the sputum gave analogous results.

A bacteriological contribution of much importance reaches us from the Transvaal. Brodie, Rogers, and Hamilton³ follow up their paper on "Acute Specific Rhinitis," published in 1894, with a report of further investigations in connection with the occurrence of purulent meningitis and pneumonia. They have arrived at the following conclusions: (1) The diplococcus described is identical with the pneumococcus of Fraenkel, but possesses greater virulence; (2) the pneumococcus is the causal factor of cerebro-spinal meningitis; (3) the pneumococcus affects the nasal mucous membrane first, with rhinitis, leading to subsequent infection of the frontal and nasal sinuses, of the middle ear, of the parotid, of the lung, and of the meninges; while a pneumococcic septicaemia, fatal in itself apart from pneumonia or meningitis, may develop as a result of the pneumococcic rhinitis.

The Pneumonia of Typhoid and that of Tuberculosis. How to diagnose acute tuberculous infection from pneumonia and typhoid fever may be learned from H. A. Hare's contribution to the *Journal of the American Medical Association* of March 18, 1899. He dwells more particularly upon two forms of pneumonia, the first resulting from a typhoid infection which ushers in the attack, the other, which may closely resemble both ordinary pneumonia and typhoid fever, being due to acute

¹ *Journal of Experimental Medicine*, March, 1899.

² *Deutsche med. Wochenschrift*, July 7, 1898.

³ *Lancet*, October 22, 1898.

pulmonary infection by the bacillus of tubercle. A case of this sort is described which shows that the onset may be as sudden as that of a true croupous pneumonia, and the physical signs may justify the diagnosis of the latter. The danger of mistaking tuberculosis for typhoid fever is not always easy to avoid until lapse of time enables us to read the etiology of the symptoms.

The High Temperature of Pneumonia. Clinical physicians are agreed that the occurrence of high temperature in pneumonia is not an alarming symptom; indeed, it is usually quite the reverse. Donier¹ dwells upon this fact, and points out that a good pulse with a high temperature is a favorable combination, while an only moderate pyrexia, coinciding with a rapid pulse, indicates feeble reaction.

Complications of Pneumonia. AN ACCOUNT OF TWO UNUSUAL COMPLICATIONS OF PNEUMONIA is contributed by Aldrich.² The first was that of a right parotitis ending in suppuration and recovery. The other case was that of a man, aged forty-three years, with right basic pneumonia, ushered in by severe chill and much vomiting, and accompanied with some jaundice, diarrhea, and muttering delirium. The delayed and slow resolution was accompanied by an attack of severe hiccough which lasted five days. He was in the habit of taking ten to twenty grains of calomel at a dose, and Aldrich on the fifth day administered a massive dose of one drachm divided into three parts at intervals of two hours. The desired result was obtained without any toxic effect, and the hiccough ceased.

PSEUDOMEMBRANOUS ANGINA IN PNEUMONIA. A. and V. Vedal describe a severe angina, of which they have seen five instances in children, due to the pneumococcus. Three of the patients recovered in seven to eight days; the two others, in whom false membrane had developed, died in spite of the injection of diphtheria antitoxin and of active treatment.

The Treatment of Pneumonia. In various other disorders, and particularly in malaria and syphilis, empiricism had provided the remedy long before the cause was discovered. The reverse is true of pneumonia; the weakest department of our knowledge is that of treatment. Although we have recognized that it is an infective disease, and have succeeded in identifying the infecting microbe, we are still unacquainted with its curative treatment, and we know practically nothing of its prevention. Analogy warrants a hope that we may ultimately discover an efficient antitoxin, although pneumonia, like influenza, belongs to the group of infections which are not protective against but rather productive of further attacks. Meanwhile, we have realized that recovery is a

¹ Thèse de Lyon, 1898.

² Medical News, November 5, 1898.

question of vitality. The first essential is to avoid any interference with the *vis medicatrix naturæ*. Next would come the endeavor to raise, if possible, the resistance of the patient, and it is toward this end that recent methods have been directed. The following brief survey of the latter will include the treatment by antitoxins, by drugs and alcohol, by cold and by oxygen. All these agents are dealt with in Morris Manges'¹ account of the treatment of acute lobar pneumonia: the five objects aimed at are: To maintain life, to support the heart, to control the hyperpyrexia, to relieve the suffering, and to control any complications. He emphasizes the importance of watching the stomach, which has to be spared for medication as well as for feeding. Plenty of water reduces the fever and eliminates the toxins. A light Moselle wine with an alkaline mineral water aids the diuresis. The best cardiac drugs are strychnine, caffeine, and nitroglycerin in tabloids or hypodermatically. Strychnine in large doses is of great value.

As pointed out by Roosevelt, hypodermatic injections of camphor in sweet almond oil are also valuable, and an ice-bag over the pericardium often aids the struggling heart. In connection with the hyperpyrexia and its control, Manges finds that the ice-bag, although useful, is not a specific against pneumonia, and in some cases intercostal neuritis has followed. Cold sponging and cold packs are often useful, and Baruch recommends moist compresses to surround the chest, but in two cases their result was an extensive furunculosis (due to staphylococcus aureus). To cold baths there are various contraindications, though they may be of use in suitable cases. For the relief of pleuritic pain and distressing cough, Paquelin's cautery and injections of morphine act more quickly than the ice-bag, and he thinks that heroin may prove a useful drug; he does not appear to have tried ice massage, the rapidity of which in reducing pain I have found to be remarkable.

As to the value of oxygen, the opinion is gaining ground that this has been overrated in the treatment of pneumonia, but its use in sudden attacks of dyspnoea and cyanosis must be recognized. For the production of sleep, morphine and chloral, the latter advocated by Balfour, are the best remedies beside cold-packs or alcohol.

BLEEDING IN PNEUMONIA. Drago² reports five case, one of which died. The beneficial effects of the natural bleeding observed in typhoid and other diseases had suggested to him its probable value in pneumonia.³

THE ANTITOXIN TREATMENT OF PNEUMONIA. A. H. Smith⁴ provides us with a useful review of this subject. Netter conferred immunity upon mice and rabbits by injecting extracts of the dried spleen of

¹ Medical News, January 7, 1899.

² La Riforma Medica, March 4, 1899.

³ Epit. British Medical Journal, April 8, 1899.

⁴ American Journal of the Medical Sciences, October, 1898.

infected animals, and in subsequent experiments by injecting the pneumonic sputum or the pleuritic exudation. Foà used successfully the attenuated culture of the diplococcus. The brothers Klemperer succeeded in curing dogs by treating them with the serum from immunized animals. The pneumococcus injections which they practised upon themselves produced either no effect whatever, or, in the case of larger injections, only some local swelling with transient pyrexia. This relative insusceptibility suggests that the gravity of pneumonia in man is due to the poisons absorbed from the seat of disease.

The immunity acquired against the pneumococcus is of short duration. Lara treated several cases of pneumonia with serum, with encouraging results. De Renzi's cases were severe, but they all recovered. Bozzolo lost one patient out of five. Weisbereker's five cases treated with serum from convalescents showed decided improvement. Washbourn's method of culture ensures a virulence of the microbes for a period of sixty-six days, and the serum which he obtained from an immunized pony gave satisfactory results in several cases. A. H. Smith looks hopefully to the future of serum-therapy in pneumonia, but recognizes that further experience alone can afford adequate proof of its efficacy.

The effects of the antipneumonic serum devised by De Renzi and Pane,¹ of Naples, were described by them before the recent Congress at Turin. By special cultures they had obtained pneumococcus more virulent than any other, a minute dose of which kills a rabbit in a few hours. The serum of the ass, of the horse, and of the cow, immunized with this pneumococcus, was, after a series of experiments on animals, injected in a case of typical pneumonia. The patient's temperature was immediately lowered and the general condition greatly improved—the patient feeling so much relieved that he desired another injection. They had had confirmatory cures in senile pneumonia, in pneumonia during pregnancy, and in that observed in various cachexie.

In their latest communication, J. W. H. Eyre and J. W. Washbourn² remind us that they had prepared an antipneumococcic serum from the pony by injecting increasing doses of the pneumococcus as early as February, 1897; Pane brought out his antipneumococcic serum in March, 1897. Eyre and Washbourn's recent results seem to practically coincide with Pane's. One c.c. of the serum protects against at least 1000 fatal doses of their pneumococcus, and, according to Pane, it protects against 3000 fatal doses of his pneumococcus. They conclude from both series of experiments that further success may be expected from this serum in the treatment of pneumonia and other pneumococcic affections.

In comparing the protective powers of the blood-serum and of extracts

¹ *Lancet*, October 22, 1898.

² *Ibid.*, April 8, 1899.

from the various organs of rabbits immunized against pneumonia, Wasserman¹ finds that while other organs contain no protective substances, bone-marrow contains considerably more of them than the blood-serum, and he infers that the protective substances may be formed in the bone-marrow and supplied to the blood, the spleen and lymphatic glands serving only as reservoirs. He believes, however, that the bone-marrow, owing to its small bulk, is not so likely as the blood to become the source of the supply for practical purposes.

The pneumonia antitoxin has not yet achieved, according to J. Edward Herman,² any definite success. This is the sum of the experience of such authorities as Fraenkel, Osler, A. H. Smith, G. S. Peabody, Vaughn and others. The serum from human convalescents recovering from pneumonia has been injected by the Klemperer brothers into rabbits and by Huber and Blumenthal into man (of fourteen pneumonic patients whom they injected two died). Also by Hughes and Carter.

TREATMENT BY DRUGS. Since the infective nature of pneumonia has become known we have heard less of specifics. Nevertheless, the medicinal cure for pneumonia continues to be sought for. Caccianiga³ has administered *nitrate of silver* in six consecutive cases of acute pneumonia (ages twelve to sixty years), with the result that in all of them the crisis occurred within two days. The daily amount prescribed (0.005 grammes to 0.015 grammes) was taken in ten pills.

Again, the value of the treatment by *perchloride of iron* is upheld by King⁴ and by A. Teevan, of Ballarat, Victoria, who, however, finds that it excites vomiting in children. The same observer thinks that many a patient is poisoned by alcohol.

Various antiseptic remedies, including sodium salicylate, have also been suggested, but the general attitude is one of skepticism as to any specific power of drugs. Fortunately, this has not brought us back to the hopeless doctrine of the "expectant treatment" pure and simple. We recognize the value of the palliative or symptomatic, of the tonic or restorative, and of the hygienic treatment by drugs.

The *palliative* treatment aims at reducing the irritability of the nervous system, especially in delirium, at reducing the pain, and at procuring refreshing sleep—and we are now provided with an ample choice of mild, sedative remedies in addition to chloral and opium and its derivatives, among which heroin has of late taken a prominent place.

The *tonic* or *restorative* treatment is chiefly directed to the heart, and the value of digitalis and of strychnine in all severe cases cannot be

¹ Deutsche med. Wochenschrift, March 2, 1899; British Medical Journal, March 11, 1899.

² Medical Record, March 11, 1899.

³ Gazz. degli Osped., May 1, 1898.

⁴ British Medical Journal, November 12, 1898.

over-estimated. Strophanthus and caffeine are useful, and nitroglycerin has also its indications. Stimulation by alcohol belongs to the same line of treatment.

The *hygienic* treatment is all important in a disease which throws so severe a task upon the emunctories. Provision must be made for as healthy a condition of the alimentary mucous membrane, of the liver, and of the lymphatic system as is compatible with the disease. The guarded use of mercury and of laxatives is an indication which must be borne in mind, but needs the utmost discrimination in its fulfilment. The object is to place the patient in the most favorable position for the elimination of waste products and for the assimilation of food. Any medicinal treatment which assists this end without introducing any undesirable complication is worthy of trial.

Alcohol, which is administered as a cardiac and nervine stimulant, needs to be considered in its collateral action upon the digestion. It is of undoubted use and by most physicians regarded as indispensable. The difficulty is to decide how much is needed and at what dose arises the danger of overtaxing the nervous system and the digestive organs.

Maragliano¹ attributes to *digitalis* a specific action on the pneumococci, which are killed by a very small amount of it, while the toxin of pneumonia when injected is also found to be partly neutralized by digitalis. He thinks that this peculiarity is an explanation for the fact that pneumonic patients will stand larger doses of digitalis than healthy persons.

The same conclusion has been arrived at by clinical observation. Digitalis is held by M. Eustace² to be antagonistic to pneumonia and well tolerated. He regards the rate of the pulse as of great prognostic importance. Sufficient digitalis should be given to slow the pulse. Alcoholic stimulants tend to inhibit this specific action, and he feels sure that he gets better results by combining ammonia with digitalis.

The treatment recommended in Alexander Smith's³ valuable paper may be briefly sketched: The patients are made to drink freely, and alcohol is prescribed for those accustomed to it as a sedative rather than as a cardiac stimulant (from four to eight ounces daily, sometimes increased to ten or twelve ounces). Five grains of phenacetin and one of caffeine are given as a frequent dose in cases of restlessness, pain, or high temperature, but not after the third day. Digitalis is exhibited only in cases of valvular disease with dilatation. Strychnine (one-fiftieth to one-thirtieth grain) and glonoin (one-fiftieth grain) are used as a routine from the beginning, about every three or four hours. No plunge baths, but the bed bath or sponge bath is administered, according

¹ Journal American Medical Association, August 27, 1898.

² British Medical Journal, June 25, 1898.

³ Medical News, December 24, 1898.

to indications. Large wet compresses of a temperature of 75° to 65° F. are exceedingly useful; so, also, is a discontinuous inhalation of compound oxygen, particularly in cases with cyanosis or pulmonary oedema.

Veratrum viride is recommended by Z. T. Magill¹ in association with strychnine and with occasional doses of phenacetin and caffeine. If the patient gets an overdose of *veratrum viride* he is nauseated and vomits; but Magill has never seen any deaths reported from its use, and it is not cumulative.

THE TREATMENT BY OXYGEN. Andrew Smith,² who introduced the use of oxygen into the United States in 1860, and showed, in his prize essay on "Oxygen Gas as a Remedy in Disease" (1870), by experiments on animals, that the inhalation of even pure oxygen is harmless, has given to the Climatological Association his valuable experience in connection with the treatment of pneumonia, for which he advocates a continuous inhalation in a small stream and without admixture of nitrous oxide.

The inhalation of oxygen in pneumonia should, according to George Stoker, be begun early and continued throughout. He recommends that the inhalation should be made from a bag. The gas in the cylinder is at a very low temperature, and it might, therefore, be risky to use it direct from the cylinder. This plan has also the advantage that the quantity used can be exactly measured. In acute cases a cubic foot in two hours is regarded by Stoker as sufficient. With regard to the temperature of the gas, I think that since the stream of oxygen as usually administered is but a small one compared with the bulk of the inspired air, the temperature of the latter would be only fractionally lowered. It is also worth considering whether the lowering of the temperature of the inhaled air might not be of some service during the high-level pyrexia of acute pneumonia. The writer has used with good results direct inhalation from the cylinders, with a careful check upon the rate of delivery by means of the taps.

As an instance of the benefit of this treatment, Stoker³ relates a case of acute pneumonia treated by continuous inhalation of oxygen, in which all the symptoms disappeared, recrudesced, and finally cleared up again inside of eight days.

Stoker's⁴ advocacy of oxygen is based upon the following considerations: (1) It helps oxidation of the blood and stimulation of the nerve centres; (2) it retards the growth of certain micro-organisms and modifies their toxins, as pointed out by St. George Reid in connection with the *diplococcus pneumoniae*; (3) it markedly lowers the temperature in

¹ Medical News, April 15, 1899.

² Ibid., November 26, 1898.

³ Lancet, May 13, 1899.

⁴ British Medical Journal, March 4, 1899.

acute cases. These points are also dealt with in a paper in the *Lancet*.¹ The important practical suggestion is made by Stoker that the inhalation should be made through the nostril by means of a soft India-rubber bulb inserted into the latter. In itself this is a great convenience, but it has occurred to me to doubt whether this plugging of one of the nostrils would not tend to make the patient keep the mouth open and breathe through the mouth, with the result that the oxygen introduced into one nostril might escape at the other. The conditions would then be analogous to those which obtain when the stream of oxygen is simply directed toward the patient's mouth.

THE TREATMENT BY COLD. There are curious inconsistencies in our therapeutics. Progress implies change and the change has sometimes been such as to mean a complete reversal of former practice. But there is something more remarkable than these serial fluctuations in the simultaneous recognition awarded, as in the case of pneumonia and of some other diseases, to opposite methods of treatment at a period when science might have been thought equal to a decisive verdict between such conflicting claims as those of the poultice and of the ice-bag. But the verdict is delayed, and many a perplexed writer has to blow hot and cold in the responsible paragraph on treatment. The special advocates of either method are more outspoken, and a good deal has been written, though not quite recently, as to the value of the local application of ice-bags in pneumonia.

Simon Baruch² strikes a middle course in recommending the application to the chest of wet compresses at 60° F. The initial shock to the peripheral nerves "is followed rapidly by a reaction which is reflected from the central nervous system to the lungs, causing deeper inspiration and increased expectoration, and to the heart, rendering the pulse slower, more tense and resisting. As the compress becomes heated, evaporation through the flannel covering causes heat diffusion and local cooling." Baruch's general advocacy of the treatment by cold is based upon Romberg's experimental demonstration that in rabbits injected with Fraenkel's diplococci the circulation is damaged by a vasomotor paralysis, while the heart itself remains unaffected; and upon Roehrig's experiments on frogs, showing that *weak* cutaneous irritants produce a narrowing of the small arterioles, but that *intense* cutaneous irritants fatigue and paralyze the innervation of the bloodvessels from the medulla and produce a dilatation of the peripheral arterioles. Cold applications to the skin belong to the former class. "The cold bath increases the resistance," but he has given up its use as too disturbing and as not essential, and also because in pneumonia the body cools very rapidly after any decided cold procedure.

¹ December 10, 1898.

² New York Medical Journal, January 7, 1899.

The general impression left upon the mind is that neither cold nor heat will cure pneumonia any more than will drugs or alcohol, and that more probably the remedy will prove to be some form of antitoxin. Yet they both add to the patient's comfort, though in very unequal degrees. Hot poulticing eases the pain, ice eases it considerably, or may even completely remove it. Moreover, ice is effectual in lowering the temperature, and from that point of view the treatment by the continuous application of the ice-bag needs judicious watchfulness, particularly when the kidneys are not sound, or the patient, through age, weakness, or alcohol, is specially liable to chill. Its discontinuous application for limited periods is less open to that objection. I am myself in favor of the direct application of ice to the skin with gentle rubbing, "ice-massage," as I have ventured to term it.¹ The cooling effect is so rapid and the relief of pain so complete, that the duration of the application need not exceed five minutes, and as this does not involve any risk nor much disturbance to the patient, the application can be repeated, if necessary, at frequent intervals, and can be safely entrusted to a nurse.

I find that Holt, who recommends the cold pack for the hyperpyrexia of children, has also used ice massage as an adjunct; he rubs the ice *outside* the wet sheet, over the trunk, and the child, still in the wet sheet, is then wrapped in the blanket upon which it was lying.

TEPID BATHING may be regarded as a modification of the treatment by cold. It has had its strong advocates, but they have urged it less strenuously of late. Indeed, we hear chiefly of its employment in small children, in whom it is not only more easily carried out, but more likely to be regarded as successful, since most of them recover spontaneously. This question is fully discussed by Dr. Alexander D. Blackader in the Section on Diseases of Children (vol. i., p. 146). In adults there are obvious and weighty objections to bathing, and so long as some proof fails to be shown that the tepid bath possesses a definite remedial virtue I cannot but think that its use should be discontinued as implying an unwarrantable risk. Even Baruch recognizes that above the age of three years cool baths are too disturbing, and that moist compresses not colder than 65° F. are a desirable substitute. The renewal of the compresses every hour is in itself a severe ordeal for a pneumonia patient, and for that reason I am not tempted to employ the method. It is not, so far as we know, essential that the stimulating and cooling effect should be applied to the seat of disease nor even to the chest. Refrigeration can be obtained by treating other parts of the body, and particularly the extremities, with much less disturbance to the patient. The method which I have employed in pneumonia and also in some cases of typhoid fever

¹ Lancet, April 8, 1899.

with excessive temperature and cerebral symptoms, is yet simpler: a suitable ice-bag, containing pounded ice and provided with an outflow tube, is placed under the nape of the neck. Much relief and comfort are experienced, even when the temperature is not markedly reduced.

INFLUENZA.

Preventive Measures. All must agree with the editorial remarks in the *British Medical Journal* for March 4, 1899: "The disease is so infectious, and its consequences so far reaching," that some prophylactic measures should be adopted.

NOSE SANITATION. The excellent precautions suggested hardly go far enough. They do not include the internal sanitation of the patient at the chief seats of infection—viz., the buccal, the pharyngeal, and especially the nasal cavity. This oversight seems to be general, for the current literature, which has been so prolific in suggestions for the medicinal treatment, hardly contains any in the direction of intranasal treatment. W. W. Gruber (*v. infra*), however, has given attention to it. I regard hygiene of the nose as the first essential in the systematic treatment of influenza. In this connection I may refer to the sensible remarks of Clarence C. Rice,¹ of New York, who directs attention to the danger arising from the daily association at school of a large number of children suffering from diseases of the nose and throat. He estimates that about 90 per cent. of mouth-breathing children have nasal obstruction, chiefly due to large pharyngeal tonsils. The obvious importance of this subject is made still more apparent when we remember that some of the specific infections, such as that of diphtheria and of scarlet fever, may, for prolonged periods, linger about the recesses of the mucous membrane. Realizing this danger, which I believe leads to a great deal of unexplained transmission of scarlet fever, and particularly of diphtheria, at schools, I have long been careful to treat the nose in every case of diphtheria, scarlet fever, measles, and mumps by the introduction of an injection of slightly carbolized oil two or three times a day. I have not found any but good results arising from the use of a solution 1 in 60 in strength, which, although it may not be bactericidal, is the means of reaching by degrees every portion of the mucous membrane, while it tends to heal any abrasions or ulcerations. I consider that the strictest nasal asepsis should be established before convalescents are allowed to return to school after these infectious complaints.

But the same line of action is yet more strongly indicated in dealing with influenza in all its varieties, but particularly in the common variety,

¹ Boston Medical and Surgical Journal, February 16, 1899.

where the nasal mucous membrane is acutely affected. At that stage, oil, which is the least irritating and the most penetrating of all applications, should be introduced by means of syringe, camel's-hair brush, or dropper, freely and frequently, and allowed to make its way up into the upper nares and sinuses by throwing the head back behind a narrow pillow and keeping it in that position, with alternate inclinations to the right and to the left, to insure a percolation of the oil into all the recesses. At a later stage disinfecting sprays or douches may be tolerated, but I am rather in favor of the continued use of oil or of parolein as least disturbing and eminently soothing, while it effectively provides for the fixation of the *materies morbi*, and is, therefore, a protection for the patient's surroundings.

As regards the patient's own prophylaxis, we are ignorant how long the infection may be harbored in the nasal fosse; relapses may originate from them if they are left uncleansed. For those liable to frequent reinfection, some such method should be employed as a preventive during the persistence of epidemics or during periods of unavoidable association with those suffering from the infection.

The Treatment of Influenza. CARBOLIC ACID. Arthur Wiglesworth¹ treats influenza by large doses of this acid. As much as 108 grains were taken in eighteen hours in one case, and in another case, not of influenza, he administered $3\frac{1}{2}$ grains of pure phenol every two hours during the waking hours, without any bad symptoms, alimentary, renal, cardiac, or nervous, for a period of three weeks. A 12-grain dose in 4 drachms of syrup of orange-peel and $1\frac{1}{2}$ ounces of water is by no means unpleasant. He is able to assure his patients most confidently that after the first two doses relief will ensue.

SALICYRIN OR SALICYLATE OF ANTIPYRIN in doses of one or two three-grain tabloids every three hours, according to the severity of the case, is no less strongly recommended by Butler Harris.² The disease is cut short in mild cases in a few hours. In the worst forms the severe pain is relieved and the temperature falls gradually without collapse or depression. Salipyrin is supposed to break up in the alimentary canal into salicylic acid and antipyrin.

CINNAMON. In this case we have the separate testimony of at least three observers. Charles Graham Grant writes in a letter to the *British Medical Journal*:³ "In Ceylon, in 1886, I learned of the immunity enjoyed by persons working in cinnamon gardens from severe attacks of malaria, and this led me to try the oil as a remedy wherever an internal antiseptic seemed indicated.

¹ Lancet, April 8, 1899.

² Ibid., March 18, 1899.

³ March 25, 1899.

"I found it useful in gastro-enteritis, recurrent boils, and, I believe, in typhoid; but I was anything but prepared to find the extraordinary influence it seemed to exert when I began to use it in cases of influenza in, I believe, the 1891 epidemic.

"My friend, Dr. H. A. Stonham, was kind enough to employ my treatment in his large parochial practice, and the remarkable results obtained he detailed to you in a letter published also in March, 1895."

Ross¹ has used the cinnamon treatment since February, 1892. The remedy is administered in doses of one-half ounce of the decoction, or two tabloids every half-hour for two hours, then every hour till the temperature falls to normal, and subsequently four times a day for four days, and has been found singularly successful. All the cases seen by Ross within a few hours from the onset were out and about in two or three days. The failure of some other cases led him in the spring of 1894 to restrict the treatment to cases seen within twenty-four hours from the onset. In all these cases the patient returned to his place in society within five days from the commencement of treatment, but this period was reduced to forty-eight hours when treatment had been commenced within four or five hours from the onset.

W. W. Gruber,² of Toledo, Ohio, discusses the manifestations, complications, and treatment of influenza, and admits that the abdominal type, the head type, and the spinal type are recognized varieties, but in many cases the so-called complications are simply an extension. This may take place along the Eustachian tube, down the bronchi, or into the peritoneum. In all these local developments, of which he gives instances, but particularly in disease of the middle ear and in the pharyngeal and nasal complications, he has found benefit from the local use of diluted hydrozone spray and from the application of cotton-wool saturated with glycozone.

As to the value of these agents I am unable to speak from experience, but of the propriety of employing local treatment I entertain no doubt.

BRONCHOPNEUMONIA.

Samuel West's³ views on the bronchopneumonia of infancy have been noticed in vol. i., p. 143. It will suffice to say that he recognizes a *primary form* analogous in its abruptness of onset, high pyrexia, and relatively short course to croupous pneumonia, which it also resembles, in being due to the pneumococcus, and a *secondary bronchopneumonia*,

¹ British Medical Journal, March 18, 1899.

² Journal American Medical Association, March 25, 1899.

³ British Medical Journal, 1898, No. 1952.

usually associated with the presence of streptococci. This is the common variety, induced by bronchitis or by acute affections of the upper respiratory tract, and slowly evolving toward recovery or death, with the well-known oscillating temperature.

Treatment. Our treatment of capillary bronchitis and of bronchopneumonia is almost as unsatisfactory as that of pneumonia itself. Part of the difficulty is undoubtedly mechanical, and the methods suggested by Abrams and by Coutts address themselves to its relief, not without an encouraging measure of success.

COMPRESSED AIR. Abrams¹ has lately used compressed air in septic bronchopneumonia. He reviews a series of sixty-one cases of bronchopneumonia of various kinds, and points out the clinical similarity between those due to tubercle and those due to sepsis. The chief difference is that in the latter the expectoration contains streptococci, staphylococci, bacilli coli communis, and pneumococci in abundance instead of Koch's bacilli. These cases are amenable to compressed air, which seems to mechanically dislodge the inflammatory and septic products from the small tubes and air sacs when other methods have failed.

Iodide of potassium has also been found of value as an adjunct.

BATHING. In the capillary bronchitis of children, Jürgensen² has had considerable success from hot baths, repeated every two hours or three or four times daily, followed by a cold effusion to the nape of the neck. Violent cough is set up and the chest cleared of mucus. A little wine is to be allowed the patients.

BELLADONNA IN THE BRONCHOPNEUMONIA OF CHILDREN. Coutts³ believes that the power with which belladonna is credited of curing the post-diphtheritic paralysis of the diaphragm is not due, as alleged, to a stimulation of the respiratory centre, but, as pointed out by Dr. Ringer, to the power which it possesses of inhibiting or diminishing secretion within the bronchial tubes and their terminations. This view would also explain the success of belladonna in warding off the congestion and œdema which sometimes carry off a patient three or four days after an anæsthetic has been used. Dr. Coutts has applied belladonna to the treatment of bronchopneumonia in children, with remarkable results. Only two deaths occurred in a series of several dozen cases. Not only was the mortality much reduced but the dyspnoea was greatly relieved; no drawbacks had to be recorded except slight delirium or irritability in a few cases, and occasionally also flushing of the skin, amounting in some cases to a scarlet rash, but usually not accompanied with any dilatation of the pupils. The dose administered was one-quarter grain of the extract every three or four hours, irrespective of age.

¹ Medical News, September 24, 1898.

² La Semaine Médicale, February 22, 1899.

³ British Medical Journal, January 28, 1899.

If further observations should confirm this encouraging report, the treatment by belladonna would probably be preferred, in view of its simplicity, to the less readily available method by inhalation.

BRONCHITIS.

Fibrinous Bronchitis. Herzog¹ has put on record two cases of chronic typical fibrinous bronchitis, in which, unlike other cases, the exudation of membrane was definitely fibrinous, as shown by the characteristic fibrin stains and particularly by the peptic test. The membranes were completely digested by artificial gastric juice. He refers also to a case of true fibrinous rhinitis; but in two cases of membranous enteritis the false membrane was found to be mucous not fibrinous.

Treatment of Bronchitis. Postural treatment, a variety of the mechanical treatment of chronic bronchitis, has been found remarkably useful in a few instances by Quinke,² particularly in those with bronchiectasis at the base. In order to drain away the secretion which sets up the severe morning cough, he directs the patient to lie for two hours as flat as possible, and after a few days with the foot of the bed raised 20 to 30 cm. Patients with diffuse bronchitis, or with sacculations not communicating freely with the bronchi and containing irritating material, are not relieved.

Visanska³ deplors the neglect of some of the old drugs in favor of new remedies not always equal to them. Apomorphine is valuable as an emetic, because it does not cause nausea, depression, and gastric irritation, and because it is available for hypodermatic use. In infantile croup $\frac{1}{100}$ to $\frac{1}{80}$ grain (for a child two to four years of age, to be repeated if necessary) acts admirably as an abortive or to clear the larynx of secretion and membrane. Again, in catarrhal laryngitis, in bronchitis with dry cough and scanty secretion, and in bronchial asthma where the morphine habit is a danger, the helpfulness of apomorphine is great; according to Visanska, it should certainly take the place of all other emetics and push ipecacuanha, tartar emetic, mustard, etc., into the background.

R. Abrahams⁴ refers to Visanska's paper and to one by Robert H. Babcock.⁵ Among affections of the respiratory tract in which it is manifestly of the greatest use in infants and children, as well as in adults, its striking value in *whooping-cough* deserves to be insisted upon. Though not curative of the cause, it palliates most of the symptoms, and Abra-

¹ Centralblatt für Path., viii. 24.

² Medical Record, June 2, 1898.

³ Medico-Surgical Bulletin, June 10.

⁴ Berl. klin. Wochenschrift, June 13, 1898.

⁵ Ibid., July 30, 1898.

hams believes that it is of much greater practical service than either belladonna or quinine.

James T. Whittaker's formula for use in acute bronchitis is a most convenient one :

R.—Apomorphinæ hydrochloratis	gr. ss-j.
Acidi hydrochlorici diluti	gtt. x.
Syrupi	ʒi.
Aquæ menthæ piperitæ	ʒi. -M.

S.—A half to one teaspoonful every two hours.

Ether-pneumonia. THE FREQUENCY of this complication is obviously not great, though different statistics show considerable discrepancies. J. M. Anders¹ quotes W. H. Prescott's report of only 3 cases in 40,000 ; but in his own series of 12,842, there were 30 cases of typical secondary pneumonia, or 0.23 per cent., and the grand total of reported cases gives 46 pneumonias in 57,842, or 0.07 per cent. His own experience leads him to believe that more accurate statistics than those available at present would show ether-pneumonia to be much more common. He regards it as comparatively frequent and at times endemic. Thus statistics from private and public hospitals in Philadelphia show a proportion of 1 in 300. It is sometimes overlooked because of the slightness and irregularity of the pyrexia.

Ochsner, commenting upon Anders' paper, refers to his records of 2600 etherizations with only two cases of pneumonia, one of which was apparently due to the inhalation of mucus, a frequent cause of pneumonia in his opinion.

THE ORIGIN of the pneumonia has been variously attributed to pre-existing chest affections, to chill, to the inhalation of septic matter or of an excessive amount of ether, but it has not been traced conclusively to any one of these agencies.

David Drummond's² paper has elicited Shuter's³ view, that much of the so-called ether-pneumonia and bronchitis is due to the abdominal conditions for which operation is undertaken, and Henderson Pounds' opinion, that the so-called ether-bronchitis is essentially a physiological hypersecretion of mucus leading up mechanically to a catarrhal pneumonia from plugging.

Anders dwells upon the possibility of particles of dried secretion becoming detached from the inhaler and conveying micro-organisms to the lung. But in cases which he had observed inflammatory conditions of the respiratory tract existed before the inhalation ; and most cases occurred in cold weather, when the patient would probably be exposed to

¹ Denver Congress of the American Medical Association, 1898, and Medical Record, June 18, 1898.

² British Medical Journal, October 1, 1898.

³ Ibid., October 15, 1898.

changes of temperature on the way to and from the operating theatre. Perhaps, also, too much ether might sometimes have been inhaled.

Mayo, while referring to the danger arising from sponges inside the mask, insists that ether-pneumonia is specially liable to occur after operations on the stomach. When the stomach is pulled out a regurgitation of the gastric fluid is likely to take place up the œsophagus, and thus into the lung.

Tinker, of Philadelphia, could find no explanation for a severe pneumonia which he had observed after a trifling operation performed during the warm season.

W. Lindemann¹ discusses the effect of ether inhalation upon the lungs, which he describes as a dilatation and loss of tone in the pulmonary vessels, and an undue permeability of their walls, which leads to œdema. The first of these results is an early event in the administration; the second is a later development. Any cardiac weakness would add to the degree of these tendencies. Ether, in his opinion, has a toxic effect upon the pulmonary vessels, and leads to an exudation of lymph which may become a soil for organisms.

WHOOPING-COUGH.

Etiology and Bacteriology. Although it might puzzle a pathologist to explain how any microbe could set up a spasm such as that of pertussis, there is a sufficient excuse in the communicability of the affection and in its clinical features for the rooted belief in its microbial origin, and Zussch² reports the discovery in large numbers, and sometimes in pure culture, of a very small bacillus, not unlike that of influenza, in the sputum of twenty-five patients. Czajewsky, on examining these bacilli, declared that they were exactly the same as those described by himself and by Hensel. But this does not account for the spasm, which is obviously a nerve reflex, as this was felt long ago by Guéneau de Mussy, whose broncho-adenopathic theory we had wellnigh forgotten.

G. A. Stephens' most interesting observations remind us once more of the physiology of the vagus, and if they should be confirmed they will possess the additional merit of leading to practical results. He traces the seat of irritation to a most unexpected quarter—the external meatus—but he does not tell us what kind of microbe, if any, may there be at work. He traces the pathological process to some local inflammation in the meatus, spontaneous or set up by measles, which irritates the

¹ *Centralbl. f. Path.*, xi.-xii., 1898.

² *Munch. med. Wochenschrift*, June 7, 1898.

filaments connected with the ganglion of the vagus. The laryngeal branches would be responsible not only for the spasm but also for the "whoop," in connection with trophic lesions of the laryngeal mucous membranes exposed to the cold air, which is always drawn through the mouth. He also suspects trophic lesions in the stomach and in the lungs, resulting in the secretion of large amounts of mucus.

A. Hadden¹ puts on record his observation of a well-marked attack of whooping-cough, lasting two months, in a young, smooth-haired greyhound, contracted from children in the house. This contrasts with Vincenzi's statement, recently published in the *Medical Record*,² that animals are not susceptible to the disease, and are, therefore, unaffected by the specific microbe which he claims to have discovered and which he had inoculated unsuccessfully.

EMPHYSEMA SECONDARY TO WHOOPING-COUGH. Newton Pitt³ insists that pathologically emphysema should not be considered solely as a pulmonary disease, but often as part of a wide-spread degenerative change, affecting more particularly the elastic tissues, and, through the change in the arteries, damaging the various viscera. Thus emphysema is associated with bronchiectasis, fibroid lung, granular kidney, and cirrhosis of the liver; often also with disease of the arteries. With this view most clinical as well as pathological observers will agree, and it is one of considerable importance from the practical stand-point of prognosis and of treatment.

At the same time, we must note that emphysema will overtake, at an early age, owing to inflammatory damage and excessive pressures bearing upon weakened tissues, lungs which otherwise would probably have been regarded as sound, and at any rate at that early period free from any spontaneous degeneracy. It may be argued, from the fact that this secondary emphysema does not overtake every child suffering from severe whooping-cough or measles, that the selection indicates some individual structural delicacy of the elastic tissues. The question is one well worth the attention of pathologists and clinicians in the future. There is undoubted significance in the observation that a great deal of the juvenile emphysema actually produced in this way recovers, and that it is in a minority of the subjects that permanent emphysema is established.

EAR-COUGH. The frequency with which more or less violent cough is set up in a patient whose ear is being manipulated, while no cough occurs at other times, is known to aurists, and explained by the presence of the auricular branch of the vagus in and about the auditory canal.

¹ Medical Record, January 21, 1899.

² December 17, 1898.

³ Clifford Allbutt's System of Medicine, vol. vi.

Mayo Collier¹ relates the instance of a girl who had had a discharge from the right ear since infancy. The cough from which she had been suffering was immediately benefited, and finally ceased within a week after removal of the polypus. The "ear-cough" is of special interest in connection with Stephens' views.

Diagnosis. Additional aids for the diagnosis of whooping-cough are offered from different sides by Fröhlich,² of Breslau, and by Henry L. Wagner, of San Francisco. Fröhlich finds in all cases a lymphocytosis reaching to 50 or 60 per cent. A discovery of this condition might materially assist the diagnosis if imperfectly established.

Wagner describes a bacterium two or three times as long as it is broad, which stained by Loeffler's solution. He finds it always present in the nose and later in the pharynx; in the nose characteristic bacteria are always found before the cough sets in, and the nasal mucus, usually containing few bacteria, presents a large number of them.

Treatment. Stephens³ having noticed during an attack of pharyngitis that cough accompanied with a characteristic whoop could be set up by tickling his external auditory meatus, inquired into the conditions of the ear in whooping-cough, and found that all the patients had either pain in their ears or a semi-fluid discharge of some duration, and that by syringing the ears night and morning with a lukewarm borie lotion and painting the meatus and tympanum with a pigment containing 23 grains of hydrochlorate of cocaine, 4 drachms of glycerin, 20 minims of perchloride of mercury solution, and water to one ounce, the patient was in every case benefited, and the whooping-cough disappeared. In eight typical cases "whooping" entirely disappeared after two days, though in some the bronchitis persisted for several days.

S. Glanville Morris⁴ reports two successful cases in boys, aged five and six years, treated by Stephens' method. In the first there was otorrhœa. The child never whooped after the first night subsequent to syringing the ear with warm borie solution and painting the meatus and membrana tympani. In the other case, free from otorrhœa, the improvement was great, but whooping continued for three or four days. Both children were well on the fifth day.

SACCHARATED EXTRACT OF THYMOL IN WHOOPING-COUGH. Fischer⁵ speaks most favorably of Taschner's "pertussin" (thymol, 1 part; syrup, 7 parts; dose, one-half to one tablespoonful three times daily), which he tried successfully in five of his own children, after

¹ *Lancet*, May 13, 1899. ² *Boston Medical and Surgical Journal*, August 25, 1898.

³ *Lancet*, December 3, 1898.

⁴ *Indian Medical Record*, February 15, 1898, and *New York Medical Journal*, March 25, 1899.

⁵ *Deutsche med. Wochenschrift*, July 7, 1897.

failing with other remedies. He was also pleased with its effect in chronic catarrh of the larynx and bronchi and in emphysema.

FORMALIN. R. E. Hinman¹ had formerly recommended the use of a 1 per cent. spray of formalin in the neighborhood of the patient.

In a recent communication,² Howard S. Olliphant states that his own formalin treatment consists purely in local applications. Out of twenty cases the duration of the most severe was less than a week, and several cases were cured after three applications. Free emesis follows each application. He warns against the use of too strong a solution.

BROMOFORM. Marfan³ sums up his treatment thus: Bromoform is given at first, and if this should fail, antipyrin and then belladonna. Finally, he falls back upon a combination of belladonna and antipyrin. He has never seen coma from bromoform, but he recommends due care in avoiding an overdose.

J. S. Stone⁴ writes to warn us against the dangers of bromoform and of carbolic acid in the treatment of whooping-cough. He refers to a case in which an overdose of bromoform mixture produced almost fatal symptoms. Carbolic acid when used in concentration may also be the source of serious complications.

ASTHMA.

Etiology. Of all the neuroses asthma is that best calculated to save us from conceit whether as clinical physicians or as pathologists. In its pathology and in its treatment contradiction still reigns supreme. The old question as to the *spasmodic* or the *congestive* nature of the bronchial stenosis remains undecided. Both views are strongly backed by clinical and therapeutical observations, and I should doubt the wisdom of bestowing upon either of them any exclusive preference. But the mystery thickens when the state of the arterioles is introduced as one of its factors. Arterial spasm cannot in any circumstances give rise to congestion, yet its occurrence is suggested by authorities such as Thorowgood and Andrew H. Smith. Thorowgood⁵ was led to suspect that the bloodvessels might be spasmodically contracted rather than the bronchial muscles, by the case of a young woman subject to asthma, who found no relief from cigarettes and fumigations. During the attack the pallor and anxiety of expression were such as to suggest that a remedy dilating the vessels would be the most likely one to succeed. The pulse was 120

¹ New York Medical Times, November, 1894.

² New York Medical Journal, March 4, 1899.

³ International Clinics, vol. i., 1898.

⁴ Boston Medical and Surgical Journal, February 16, 1899.

⁵ Lancet, December 17, 1898.

and small, the chest moved up and down without true expansion, and there were fewer wheezing sounds than in the ordinary case. Drop doses of nitroglycerin solution gave some alteration, but complete relief was obtained from repeated doses of 10 grains of chloral hydrate. The patient subsequently improved in health.

Dr. Gee,¹ in his delightful and scholarly "Lumleian Lectures on Bronchitis, Emphysema and Asthma," endeavors to elucidate the pathology of asthma, which he regards, from analogy with kindred diseases such as spasmodic croup and paroxysmal coryza, as a peculiar form of bronchitis. He submits that inspiratory spasm is not the cause of the asthmatic paroxysm; it is the deflation of the lung which is at fault.

According to Gee, there is no need to resort to the hypothesis of spasm in order to explain the phenomena of the disease. He refers to the opinions of Beau and of Sir Andrew Clark and to Lefevre's classical description of the expectoration as "cooked vermicelli;" they support the view that all asthma is merely a peculiar form of bronchitis. But, he asks, in what consists the asthmatic tendency? Why should it be inherited, and what is the link which connects the several diatheses of asthma, of eczema, and of gout?

Almost the same views have been expressed by Von Leyden,² who agrees in the main with Fraenkel: "Bronchial asthma may be spoken of as fibrinous bronchiolitis; but though it has much in common with fibrinous bronchitis, it is not the same thing, for fibrinous bronchitis may exist without asthma. It may also arise from an acute catarrh, but only in individuals who are predisposed to asthmatic attacks.

"Eosinophile cells are seen in great numbers in the sputum in almost every attack of asthma. The most rational explanation of this fact is that the serum which exudes in the alveoli and in the small bronchi, and which later forms the coagulations and the crystals, has a chemotactic action upon the eosinophile cells of the blood, drawing them thither in great numbers. Attempts to make of asthma an infectious process have failed. That infection is not present is shown by the absolute lack of suppuration in the fresh attacks. The micro-organisms which have been described in this connection have their origin doubtless in the larger bronchi."

Another theory of the etiology of asthma is that put forward by Ernest Kingscote,³ who believes that dilatation of the heart may be the starting-point of the neurosis by occasioning pressure upon the vagi. Treatment, such as the Nauheim treatment, which reduces the size of the heart, likewise cures the asthma, and he has devised a method which

¹ British Medical Journal, March 25, 1899.

² Verein für innere Med., May 16, 1898; Medical News, January 30, 1898.

³ Transactions Medical Society of London, vol. xxi.; also "Asthma," London, 1899.

is a considerable modification of the Nauheim method combined with inhalation of oxygen twice daily.

It is hardly necessary to point out the difficulty of proving that dilatation of the heart, however extreme, is likely to produce any appreciable pressure upon the vagi. The frequency with which great enlargement of the heart exists without any asthmatic symptoms is an almost insuperable objection to Kingscote's theory. The vagus neurosis must be due to some other form of irritation, though it may be aggravated by secondary dilatation.

Treatment. Beverley Robinson's¹ "Clinical Notes on Asthma and its Treatment," a valuable survey of the practical aspects of the affection and its management, elicited a discussion of considerable importance, which, no less than the paper, deserves careful perusal.

ATROPINE. Trousseau's treatment with atropine is being revived by von Noorden.² "The initial dose of one-sixteenth of a grain is to be increased every two or three days till we reach one-tenth of a grain per dose, after which the dosage is gradually diminished. The physician is cautioned to exercise great care while it is being administered. Atropine may perhaps not influence an individual attack; it is, however, sure to prevent any recurrence for some time to come."

COMPRESSION OF THE PNEUMOGASTRIC. We have also to note Miranda's³ reported success in checking severe attacks of asthma by compression of the pneumogastric in the cervical region. He had previously been able to arrest paroxysms of pertussis by the same method.

OXYGEN. Thorowgood speaks of the inhalation of oxygen or of compressed air as stimulating the capillary circulation; but there is much food for thought in Andrew H. Smith's statement, that although the relief from oxygen inhalations is in some cases immediate, in others oxygen does little or no good. He sees a possible explanation for this paradox in the assumption that there may be a spasm in the arterioles as well as in the air tubes.

SUPRARENAL EXTRACT. From the therapeutic side the precisely opposite idea has been acted upon by Swain and by S. Cohen. Swain advocates the use of suprarenal extract in hay fever and analogous affections. He⁴ has arrived at the following conclusions: (1) The aqueous extract of the suprarenal is a powerful local vasoconstrictor and contracts erectile tissue; it may be safely used in considerable amounts.

¹ Therapeutic Gazette, January 16, 1899.

² Münch. med. Wochenschrift, September 27, 1898; Boston Medical and Surgical Journal, November 3, 1898.

³ La Semaine Médicale, May 18, 1898, and Journal American Medical Association, June 25, 1898.

⁴ Medical Record, May, 1898; Edinburgh Medical Journal, February, 1899.

(2) No vicious habit is established by a repetition. (3) It seems to heighten the effect of any local medication. (4) Its best and widest opportunities are in the acute congestions, but it may also be relied upon in some chronic conditions, such as those of the hay fever type.

TREATMENT IN GENERAL. The first lesson to be derived from these contrasts is that we should keep an open mind upon all questions relating to the etiology and to the mechanism of asthma. No uniform description can possibly apply to all cases. In some the primary seat of irritation is nasal, pharyngeal, or bronchial, in others olfactory, in many gastric. Mental influences have a marked action, and cutaneous impressions have also their share. Again, the mechanism is not always the same; the inspiratory or the expiratory type may prevail. Every gradation may be found between the purely nervous asthma and that of the highly developed catarrhal type, and the degree of the associated emphysema introduces endless varieties. In the group of nervous asthma we have a collection of individual idiosyncrasies for volatile products no less diversified than the idiosyncrasies for drugs and for ingesta. Any endeavor to establish a unity of type must prove delusive. It may be observed in passing that the often conspicuous failure of oxygen inhalations emphasizes the void in our etiology, and agrees with the observation that the average sufferer from asthma is better off in the smoke-laden and tainted air of cities than in the country. Here again, however, there is no constant rule. Some do well in the rarefied atmosphere of altitudes, while others are benefited by compressed air.

The second lesson is yet more important, and relates to practice. Until much brighter light has been shed upon this obscure region of pathology, refinements of theory are untrustworthy guides, more likely to mislead than to safely direct our treatment. Let us rather keep in view the broad clinical lines of the affection: (1) Its local cause, which we should endeavor to detect and to remedy; (2) its predominant factor of hyperaesthesia, which we must seek to reduce by the least damaging agents; (3) its inherent feature of delicacy, for which a well-planned hygiene is the safest tonic.

Under the first heading I would call attention to Thorowgood's¹ remarks on the treatment of two types of asthma. One case was that of a boy with nasal obstruction by polypi, which was cured by operation. In this case there was marked inspiratory dyspnoea, but no cardiac dilatation. The second case, that of a man, was of the emphysematous kind, with dilated heart, and the treatment was directed to the relief of the latter.

Among our checks for the hyperaesthesia and for the bronchial irrita-

¹ British Medical Journal, June 18, 1898.

bility of asthmatics, a prominent place is claimed for *paraldehyde* by Alexander MacGregor,¹ who gives eleven cases in which this treatment was successful.

Orthoform in the allied affection of hay fever has been reported highly successful by Lichtwitz,² though it has not been supported by much further testimony.

Goldschmidt's³ essay deals not only with the medicinal and with the inhalation methods, but enters also into the question of the physical and the hygienic treatment. He dwells upon the various drugs he has found useful, including morphine, chloral, amyl nitrite, chloroform, which relieve temporarily; iodides, which may be very useful or contraindicated, and compressed air, more suitable for some of the sequelæ than for the actual attack. He has found sulphonal and trional useless; anti-pyrin and quinine sometimes useful. Morphine is most valuable, and chloral, prescribed in a dose of two grammes, may be repeated in doses of one-half gramme every quarter of an hour until sleep is induced, so long as more than five grammes are not administered. Great stress is laid upon inhalations and upon the balnear treatment. An asthmatic subject, even with catarrhal symptoms, may be vigorously sponged with water at 18° C., warm drinks being administered at the same time. In permanent asthma, baths at 27° C., with douches at 12° C., are of use. Again, vapor baths are beneficial, but should be given carefully and only twice a week. The treatment of an acute attack is to begin with stramonium fumigation, and, if this fails, strong stimulation of the skin with hot water, and lastly morphine and chloral if no relief should have been obtained.

Oxycamphor has been studied clinically in the treatment of dyspnea by R. Jacobson.⁴ It was first used by Ewald. It does not act upon the heart in the way characteristic of camphor, but depresses the irritability of the respiratory centre in cases of lung, heart, and kidney disease. The dose of the powder is 0.5 grammes; but it is more suitable for administration in a 50 per cent. alcoholic solution. In two cases nausea was set up, and in two other cases the drug seemed to lose its effect.

In conclusion, we must bear in mind that chloroform inhalation is in all cases a means of immediate relief for the respiratory distress; that stramonium fumes are a specific in most of them; that iodide of potassium is, in the generality of cases, of great use in loosening the tenacious

¹ British Medical Journal, 1893, vol. i. p. 65.

² Arch. internat. de Laryngol. Paris, 1898; Edinburgh Medical Journal, February 1899.

³ Treatment of Asthma. Munich, 1898.

⁴ Berliner klin. Wochenschrift, April 7, 1899.

secretion which plugs the bronchioles in the "bronchiolitis exudativa" of Curschmann; and, lastly, that few neuroses will resist a systematic plan of purgation if this can be instituted without dangerously lowering the strength of the patient.

Dyspnœa of Toxic or Reflex Origin. Closely allied to the subject of asthma are the morbid reflexes of the vagus and of the variety of asthma known as toxæmic dyspnœa.

ALIMENTARY TOXÆMIC DYSPNŒA in its least severe forms may lead to varied symptoms, often indeterminate and nameless, but sometimes capable of being grouped into a definite complex, which may be gouty, asthmatic, or anginoid. This is the mode of causation claimed for the dyspnœic attacks, chiefly nocturnal, but brought on also during the day by much effort or excitement, which have been recently described by Bohn.¹ Constrictive chest pain, with prostration and perhaps vomiting and eructation, and subsequently excited cardiac action, precede the onset of the asthmatic dyspnœa; the dyspnœic stage may last half an hour and be followed by bloody expectoration. The occurrence of peripheral ischæmia, *digiti mortui*, vertigo, and suppressed renal activity suggest arterial spasm, and this may depend upon the absorption of irritating products of indigestion. The subjects of sclerosis and of defective elimination are more liable than others. A marked tendency to recurrence would be an indication for strict dieting, and perhaps for alternating, week by week, an exclusive milk diet with a light ordinary fare.

HAY FEVER.

The *prevention* of hay fever has been attempted by Alexander Rixa,² who refers us to his publication "How to Prevent Hay Fever," in the *Therapeutic Gazette*, January, 1891. The method consists in irrigating and sterilizing the nasal cavity with some harmless antiseptic application, such as hydrozone or a 30-volume aqueous solution of peroxide of hydrogen, by douche or atomizer. One to three ounces of hydrozone to twelve ounces of sterilized water may be used as a douche three or four times a day.

W. H. Weaver³ expresses the encouraging view that the great majority of cases of hay fever are easily curable if tact and patience are employed. Local measures occupy a large place in the treatment, which, according to him, should be directed to the hypertrophied sensitive area of Sajous at the anterior extremity of the middle turbinated bodies, and to Mac-

¹ *Journal de Médecin*, June 10, 1898.

² *Journal American Medical Association*, January 21, 1899.

³ *Ibid.*, June 4, 1898.

kenzie's sensitive area situated at the posterior end of the lower turbinate bodies, and over the corresponding surfaces of the septum. He makes the significant observation that when these bodies are deeply cauterized their contraction is often so great that subsequently inspired air is not properly warmed and moistened, and that the throat may become dry and the patient put in a worse position than before. Internal medication has also its place in the treatment. Dr. Roe has reported thirty-six cases of cure, out of a total of forty-four, by local treatment.

HICCOUGH.

We have not made any advance in the etiology of this troublesome affection, but so long as its rational treatment remains beyond our reach, for want of more precise knowledge of the cause, we must welcome any empirical methods recommended by genuine success, although, as in the following instances, their efficacy has been tested upon a single case only. In the case related by Christmas,¹ the obstinate hiccough had lasted for nine days in a man, aged fifty years, of nervous temperament. Crushed ice, bromides, chloral, mustard to the epigastrium, calomel, morphine, and inhalations of ammonia had all proved ineffectual. Two minims of nitroglycerin solution in a drachm of spirits of chloroform and an ounce of water, administered every hour, controlled the spasm after four doses.

Another cardiac stimulant, pure ether, was administered successfully by Stamford G. Felce² to a female patient, aged sixty years, whose hiccough had persisted for four days. "May not," he asks, "the singultus be Nature's demand on the vasomotor centre for an increased visceral circulation?" I would suggest that a more direct explanation of the relief might perhaps be based upon the sudden distention of the stomach by the liberal dose administered (half a drachm), and upon the mechanical effect of a substitution of the expulsive spasm of eructation for the recurring inspiratory spasm of hiccough.

The same line of thought is suggested by the mechanical method accidentally discovered by Kolipinski,³ of Washington. A man, aged fifty-nine years, after three days of hiccough, felt severe throat discomfort, with dread of suffocation. An examination of the throat with the handle of a large spoon which pressed the tongue downward and backward with considerable force immediately stopped the hiccough; it returned an hour later, but the patient was then able to stop it for himself by applying the same method.

¹ British Medical Journal, March 11, 1899.

² Ibid., March 18, 1899.

³ Maryland Medical Journal, February 25, 1899; Lancet, March 18, 1899.

Here, again, we have the stimulus to the expulsive spasm of retching, and we are reminded of the old-fashioned remedy of a draught of mustard and water.

An analogous cure for hiccough reaches us from Paris. Five grammes of sodium bicarbonate in half a glassful of Vichy water at one draught will dispel the hiccough in a storm of eructations.

In the *British Medical Journal* for April 29, 1899, three successful remedies are reported: Nitroglycerin, by W. Bezly Thorne; oil of turpentine (.5j in mucilage), by Harold Gurney; and a blister on each side of the spine (at the level of the third, fourth and fifth vertebrae), by E. Mansel Simpson.

PULMONARY PHTHISIS AND TUBERCULOSIS.

The Prevalence and the Distribution of Phthisis. The medical press provides an almost continuous record of the proceedings of scientific societies and of corporate bodies in connection with tuberculosis. The plan of campaign has been the same everywhere; isolated samples of the work may, therefore, suffice. For instance, the enormous death-rate from phthisis is a never-ending theme, to which the briefest allusion only is here possible. C. E. Fitzgerald reminds us that 70,000 persons die annually from tuberculous disease in England, according to Ransome (Milroy Lectures, 1898); in the case of more than one-third of this number death occurs during the productive life period between fifteen and forty-five years. Lindsay has estimated the number of sufferers from phthisis at the present time in the British Isles at not less than a quarter of a million, while Sir Herman Weber has shown that hospital accommodation is provided for one only in every thousand of these patients. Professor Von Leyden reckons the annual death-rate from phthisis in Germany at 170,000, and the total of living patients at 1,300,000. Biggs has drawn attention to the fearful mortality in prisons, asylums, and convents (on the average 38 to 62 per cent. of all deaths in these institutions). In London, with its 4,500,000 people, tuberculosis causes one-seventh of the entire death-rate.

Grimshaw has made an exhaustive study of the statistics of phthisis in Ireland. During the years 1895, 1896, and 1897 they show an average annual death-rate from all causes of 17.3 per 1000. Phthisis alone caused 11.7 per cent. of all the deaths, the percentage for the districts with towns of over 20,000 population being 13.3, for those with towns of 10,000 inhabitants and upward 13.2, or slightly less, as compared with 11.1 per cent. for the rest of Ireland. These figures point to the conclusion that the proportion of deaths from consumption to total deaths is very high even in the country districts.

In New Jersey, the distribution of pulmonary tuberculosis, studied by Guy Hinsdale,¹ does not show such wide variations as in New York and Pennsylvania. The counties with the largest cities show a prevalence only twice as great as sparsely settled regions.

The Bacillus: Its Varieties and its Variations. THE IDENTITY OF AVIAN AND HUMAN TUBERCULOSIS. Nocard, who has shown avian and human tuberculosis to be varieties of the same species, points out their differences: (1) In the aspect of the cultures—dry and warty in the human, fatty, shining, and soft in the avian; (2) in the upper temperature limit for the growth of the bacilli, above 42° C. for the human, above 44° C. for the avian; and (3) in the results of inoculation in animals. The fowl resists human inoculations but not the avian. Dogs may be infected through the veins or the peritoneum with human tuberculosis, whereas even large doses of the avian remain without any effect upon them. The guinea-pig also presents relative resistance to injections of the avian virus under the skin, although reacting to very small doses of the human virus. Rabbits suffer equally, but in different ways, from the two inoculations, human infection giving rise to generalized tuberculosis, avian infection to bacillary septicæmia. Although the horse is difficult to inoculate, it originates spontaneously two forms of tuberculosis—the *abdominal* and the *pulmonary*. These appear to correspond to two sources of infection, the bacilli derived from the pulmonary form having properties resembling those of human tuberculosis, the other form approximating to the avian type. Nocard believes that man is also subject to both these forms. He refers to a case in which the cultures of human sputum resembled closely avian cultures. This points to the danger arising from tuberculous birds in relation to food and otherwise. He has furnished experimental proof of the identity of the human and of the avian type by transforming the one into the other. Human cultures from glycerinated broth were introduced in bags of collodion into the peritoneum of fowls. After six to eight months the sacs contained more bacilli, and these, when cultivated, developed the morphological properties of tubercle. They were harmless when inoculated into fowls. But after passing through several fowls in succession, the cultures were apparently completely transformed, so that guinea-pigs and rabbits were affected just in the same way as by the original avian tubercle.

Thus there may be danger in eating tuberculous poultry. Conversely, Nocard has known numerous instances of poultry yards being infected by tuberculous persons employed to look after them, though it is known that fowls picking up tuberculous sputa do not themselves become tuberculous.

¹ Medical News, September 10, 1898.

THE BACILLUS AS A SAPROPHYTE. Ransome,¹ whose previous observations had shown that ventilation deprives the bacillus of its virulence, has now shown that it is a saprophyte as well as a parasite, and can be made to grow in the organic matter contained in expired air or the vapor from the soil. He experimented with liquids obtained (1) by freezing the expired air both of healthy and of phthisical subjects, (2) by condensing the vapors arising respectively from the contaminated soil of a town, from a clayey soil and from a sandy soil. Having determined the free and saline and the albuminoid ammonia, he sterilized the fluids and soaked in them pieces of filter-paper, and on these he obtained vigorous colonies.

PSEUDO-TUBERCULOSIS AND MIXED TUBERCULOSIS. Muir's² important paper on "Pseudo-tuberculosis in Birds and in Rodents," in the *Journal of Pathology* for May, 1898, describes a pseudo-tubercle bacillus of small size, which he believes to be the same organism as that of Nocard, Pfeiffer, and others. In all the animals used the spleen and liver were the chief seats of the lesion, but the differences between birds and rodents were great—an enormous growth of bacilli took place in the former, but in the latter only a well-marked tissue reaction, accompanied by increase of cells, while the bacilli gradually diminished.

The question of the *mixed infection* of pulmonary phthisis has been much discussed, it being now recognized that the infection may not always be purely of tubercle bacilli. Michaelis has demonstrated staphylococci in the blood of eight out of ten tuberculous patients, and Petruschky found streptococci. Both sets of microbes seemed to possess but slight virulence.

Considerable stir was occasioned in pathological circles by Flexner's³ observations on "pseudo-tuberculosis" due to streptothrix pseudo-tuberculosis, an affection of which two similar cases have been reported from abroad almost simultaneously. Flexner's patient was a negro, seventy years of age, whose case was diagnosed as phthisis, but there was no sputum to examine. Areas of consolidation and scattered nodules were found in the lung, some of the latter calcified. There was also nodular disease of the peritoneum, identical in aspect with tuberculosis. Neither section nor culture showed any bacilli, and inoculation gave negative results. But Flexner found streptothrix belonging to the class defined by Kruse, which also contains streptothrix actinomyces and streptothrix maduræ. The resemblance to the symptoms of tuberculosis is so great

¹ Extrait du Congrès de la Tuberculose. Paris, 1899; British Medical Journal, January 28, 1899.

² Edinburgh Medical Journal, March, 1899.

³ Journal of Experimental Medicine, vol. iii., Nos. 4 and 5; British Medical Journal, October 15, 1898.

that the clinical distinction between the two diseases seems to be an achievement for the future.

Flexner's paper elicited important views from Sims Woodhead, Sidney Martin, Washbourn, MacFadyean, and others at the discussion before the Pathological Society.¹ The almost general conclusion was that it would be well to avoid the complications which might arise from using the name "pseudo-tuberculosis."

CASEOUS PNEUMONIA PRODUCED BY BACILLARY TOXINS. Auclair² claims to have proved by numerous experiments that caseous pneumonia is due exclusively to toxins elaborated by Koch's bacillus. "All authors have regarded it as a mixed infection due to streptococci and pneumococci. If extracts of cultures of the tubercle bacillus made with ether or chloroform are injected into the trachea of guinea-pigs, the result will be the production of caseous pneumonia with giant cells, fibrinous exudation, sclerosis, etc. Cultivation experiments made with the caseous foci thus obtained never yield cultures. Nothing can be more decisive as to the connection between caseous pneumonia and tuberculosis."

Etiology. **HEREDITY.** The encouraging conclusion may be drawn from accumulating evidence that hereditary transmission is a less danger than that of subsequent infection.

In the *bovine race* heredity is shown to be almost a vanishing factor, and efficient isolation, when, thanks to the tuberculin method, it is applied early in the cow-sheds, is a sufficient check upon the spread of the disease.

Radical methods of diagnosis and of isolation cannot be utilized in the human subject to demonstrate the degree of immunity from direct inheritance. It is probably small. Heredity has been found at the highest estimate to account only for one-sixth of the cases. Thus it has been estimated that of 150,000 annual deaths from tubercle in France 125,000 might be avoided.

The current belief that a *predisposition* is inherited is plausible, and strong evidence will be needed to disprove it. But it is also consistent with our recent theories and facts to assume that parental phthisis might possibly confer a relative immunity. This view is urged by King,³ who finds that among 100 non-tubercular patients, 26 had lost one or both parents from phthisis. He believes that phthisical parents impart to their progeny a certain immunity, and of this he adduces an instance.

We cannot here enter into the important details of King's analysis of his cases of phthisis. E. J. Squire had previously found that in 1000 subjects the number of cases of phthisis evolving where there was

¹ Pathological Society of London, February 21 and March 7, 1899.

² Paris Academy of Medicine, July 19, 1898; Lancet, July 30, 1898.

³ Medical News, December 3, 1898.

parental phthisis amounted to 33.16, and where there was no parental phthisis to 23.65, and since 14 per cent. more female children belonged to the first than to the second set, the influence of the greater opportunities of infection seemed to be strongly asserted.

Comby¹ has also studied the question in a series of 211 necropsies of children under two years of age, and discards heredity as a factor of importance.

PHTHISIS IN RELATION TO MATRIMONY is a large subject with many aspects. The main question whether consumptives should be allowed to marry is easier to discuss than to bring to any practical conclusion. In connection with the possibility of a State regulation of marriage, Spiers² states that in the recent session of the Legislature a bill was introduced to regulate marriage. What became of the bill is not known, but "in the future some measure of this character will be enacted to prevent disease; the laws of Ohio, it is hoped, will be changed for the better in the years to come."

RACIAL PROCLIVITY. The frequency of consumption among the *English Jews* is estimated by A. Gaster³ at only about one-half the general frequency, and he attributes this to race influence. Jews seem to suffer mainly from the intestinal form, owing to consumption of infected food and milk, although, according to the Talmudic laws, the use of diseased meat is less likely among them.

In the *negro race* great vulnerability to tuberculosis seems to have been acquired in recent years. J. A. Faison⁴ recalls the fact that pulmonary tuberculosis was practically unknown in the colored race in the South before the war, while it is now assuming gigantic proportions. Incidentally, he mentions that he has never seen a case of chorea in a negro and only heard of one.

Sources of Infection. **TUBERCLE BACILLI IN BUTTER.** Rabino-witsch⁵ relates the results of an original research carried out in Koch's Institute, which show that when the butter is obtained from genuinely different sources the high rate of occurrence of the bacillus, which had been reported, is not confirmed. The alleged frequency was probably due to samples having been examined separately which were really derived from the same infected supply.

THE DANGER FROM BREAD needs only to be mentioned for it to be understood. The strong heat of the oven usually disposes of any infective contamination; but, in view of the subsequent handling of the bread, it is urgent that phthisis should be rigidly excluded from the baker's

¹ Archives de Méd. des Enfants, May, 1898.

² Medical Record, August 20, 1898.

³ British Medical Journal, September 3, 1898.

⁴ Medical Record, March 11, 1899.

⁵ Deutsche med. Wochenschrift, January 5, 1899.

shop. The need of State control in this direction impressed itself upon me lately when a young baker was under my care for phthisis.

THE HANDS AS A SOURCE OF INFECTION. E. R. Baldwin,¹ of Saranac Lake, N. Y., has recently proved by inoculation experiments that an infection may be conveyed from the hands in phthisis. Living tubercle bacilli are not infrequently present on the hands with those who are not careful with handkerchiefs, clothes, etc. Perhaps the danger from tuberculous cattle may have been exaggerated, and some of the trouble may have arisen from a much more common human source.

INFECTION IN THE EXPIRED AIR. Bowditch,² in his "Suggestions," refers to the alleged infectiveness of the expired air from the mouth. J. J. Curry³ has investigated this matter with Edwin Klebs, of Citronelle, Ala., and states that bacilli are found, as alleged by Flügge, in some of the droplets expelled from the mouth during hard cough, but he believes that this danger has been overestimated.

TUBERCULOSIS IN OLD CLOTHES. The bacillus travels with us by coach and by rail, and we may wear it in our clothes. Indeed, old clothes have been proved by William G. Bissell⁴ to contain the infection. The centrifugalized washings from pockets removed from old uniforms yielded infective sediment, which injected into 16 guinea-pigs led to the death of 7 from acute septic trouble; 2 of 5 animals that recovered temporarily died of tuberculosis. This has led in Buffalo to a recommendation for the municipal control of dealers in second-hand clothing.

TUBERCULOSIS IN RAILWAY CARRIAGES. Attention has again been directed to this danger by Petri.⁵ The first note of alarm had been sounded by W. Prausnitz, who discovered virulent tubercle bacilli in the railway carriages running between Meran and Berlin. The Prussian Government has taken action in this matter.

TUBERCULOSIS FROM HOUSE PETS. Tucker Wise,⁶ in his paper on prophylaxis, is not content with dealing with the usual topics of hygiene, but calls our attention to the important subject of household pets. Among the animals that come in contact with man, the bovine race are liable to tuberculosis, pigs occasionally, rats are rarely tuberculous, but mice sometimes. Rabbits and guinea-pigs are highly sensitive to the infection; dogs are occasionally tuberculous; cats rather more often than dogs. The horse, the donkey, the sheep, and the goat are rarely affected with tubercle. Fowls, pigeons, doves, canaries, parrots, and all cage-

¹ Medical Record, March 25, 1899.

² Boston Medical and Surgical Journal, November 17, 1898.

³ Ibid., October 13, 1898.

⁴ Medical News, February 4, 1899.

⁵ British Medical Journal, March 11, 1899.

⁶ Medical Record, October 22, 1898.

birds are commonly the subjects of tuberculosis, chiefly intestinal, and they are, therefore, to be carefully watched from the point of view of infection.

In a further communication on "Infection of Tubercle from Song-birds," Wise¹ adduces a series of cases of phthisis in which he traces the infection to canaries and other cage-birds.

THE CHANNEL OF INFECTION IN CHILDREN. Infection through the alimentary canal is admittedly rare in the adult. In the infant it has long been considered to be a common if not the most common mode of entry; but this view has been questioned of late.

Comby, who has made an exhaustive analysis of a series of 211 necropsies of children under two years of age, with reference to the frequency of pulmonary tuberculosis, bases his conclusions that the respiratory tract rather than the intestinal is the source of infection, upon the frequency of caseation in the tracheo-bronchial glands and of tuberculous disease of the lungs. Again, the worst prognosis is that of pulmonary tuberculosis in the youngest children.

Leonard G. Guthrie² also gives us a careful analysis of the situation of the lesions in a series of 77 necropsies. His conclusions are of interest in their practical relation to the milk question: 1. Thoracic tuberculosis in children is more common than abdominal, in the proportion of three to two. 2. *Tuberculosis mesenterica* as a cause of death in young children is practically unknown. 3. The lungs may be affected not only by bacilli inhaled, but (*a*) by bacilli entering the thoracic glands through the lymphatics of the pharynx, tonsils, and œsophagus above, and of the intestines and the abdominal glands below; and (*b*) by the entry of bacilli through the thoracic ducts into the pulmonary circulation *via* the right heart. 4. Primary infection through the alimentary tract does not prove that food has been the sole source of evil. Therefore, tuberculosis in children is not likely to be materially checked by purification of milk-supply alone. 5. The alleged increase of tuberculous meningitis of late is probably due to pulmonary tuberculosis set up by severe epidemics of measles.

We should not lose sight of the fact now prominently brought forward by Jessen³ and by Dieulafoy, that the tonsil is the seat of entry for various infections, including the tuberculous, and that chronic tonsillitis, as well as naso-pharyngeal vegetations, are often due to the bacillus of tubercle.

The Diagnosis of Tuberculosis. **THE DIAGNOSTIC VALUE OF THE AGGLOUTINATION OF KOCH'S BACILLUS BY HUMAN BLOOD-SERUM.** S. Arloing and P. Courmont referred at the Paris Congress to their previous communications, and brought forward fresh observations which

¹ Medical Record, October 22, 1898.

² Lancet, February 4, 1899.

³ Münch. med. Wochenschrift, June 7, 1898; Bull. de l'Acad. de Med., April 30, 1895.

suggest to them the hope that serum diagnosis may enable us to detect the earliest beginning of tuberculosis.

Dubard has obtained agglutinations not only from tuberculous blood but from various chemical antiseptics, from liver-extract, and from the serum of various healthy animals. Important experimental results are based upon the fact that the blood of the guinea-pig normally lacks agglutinative powers, but can be made agglutinative by the injection, and particularly by the ingestion, of bacilli of tuberculin or of caseous extracts, etc.

Mongour and Buard¹ have observed sharp agglutination by the serum of four patients suffering from tuberculous, serous, and hemorrhagic pleurisy, as well as by the serum of nine phthisical patients. Twenty patients suffering from other diseases were examined, and a positive result led, in several cases, to the discovery of latent foci of tuberculosis in them. The less the cachexia in the subjects of tuberculosis so much the sharper was the agglutinative reaction.

THE DIAGNOSIS BY EXAMINATION OF THE SPUTUM. A new stain for the bacillus is brought forward by Marion Dorset.² Sudan iii., a selective stain with an affinity for fats, was described by Daddy³ in his original paper. The staining process occupies about the same time as the carbol fuchsin. Three varieties of the method are described by Dorset.

THE VIRULENCE OF SPUTUM KEPT FOR A LONG TIME has been compared by Hance,⁴ of Lakewood, N. J., with that of fresh sputum. The former did not prove infective to guinea-pigs, while fresh sputum did. Does sputum kept long in a liquid state develop properties toxic to bacilli? and, conversely, if sputum dries rapidly does it retain its virulence longer? These are practical questions worthy of further investigation.

DIAGNOSIS BY THE RÖNTGEN RAYS. Unfortunately, in the early stages, when the clinical and the bacteriological methods may fail us and when the Röntgen rays might be most valuable, their evidence is least likely to be sufficiently explicit. Since a thickened pleura may give a shadow indistinguishable from that of a slight consolidation, radioscopy is an imperfect guide. Nevertheless, Bouchard and Claude consider that it is capable of furnishing independent evidence when the ordinary methods have failed.

The same view is shared by Beclère, who recommends radiography. Kelsch, on examining radioscopically 124 male hospital patients suffering from various affections and reported free from pulmonary lesions

¹ Soc. de Biol., December 10, 1898; Medical News, January 14, 1898.

² New York Medical Journal, February 4, 1899.

³ Gior. R. Acc. Med. Torino, 1896, No. 2. ⁴ Medical News, December 17, 1898.

after ordinary examination, was enabled, in fifty-one of them, to detect on the fluorescent screen changes such as lessened transparency, enlarged bronchial glands, opacities of the pleura, and lessened mobility of the diaphragm, which he regarded as distinctive of tubercle. Clinical confirmation is thus afforded to the estimate of the frequency of tubercle in young subjects (two or three out of every five, according to the same authority) based upon post-mortem examinations.

The identification of a slight diaphragmatic pleurisy, perhaps marking the beginning of tuberculosis, and its diagnosis from a simple intercostal neuralgia, may be attainable only by radioscopy, which may reveal thickening and lessened movement of the diaphragmatic shadow.

These are sanguine views as to the value of very minute indications. We are told, for instance, that even a slight opacity in the region of the apex is of importance in prognosis. It must be obvious that for a correct appreciation of signs so slight the trained observation of an expert must be a first essential.

The illustrations which accompany the paper of J. R. Rudis-Jacinsky,¹ of Cedar Rapids, Iowa, on "The Diagnosis of Tuberculosis by the X-rays," justify his conclusion that the X-ray method in its undeveloped stage is not yet applicable in every case.

GENERAL CLINICAL METHODS OF DIAGNOSIS. Dunbar Roy² suggests a new line of diagnosis for pulmonary tuberculosis, based upon the patient's intrabronchial sensations. The patient is made to take a deep, strong inhalation of camphor menthol in albolene (20 drops to 1 ounce) from an atomizer (thirty pounds compressed air pressure). If the case be one of simple bronchitis the patient will feel the whole chest pervaded with a cooling sensation almost as perfectly as is the case in health; but if tuberculosis be present, even at an early stage, the sensation will not be felt below the tops of the sternum. He does not claim this as an invariable sign, but the idea is welcome as it suggests a novel and, perhaps, a wide field for future observations.

Edward F. Wells³ proposes to use small doses of iodide of potassium (2 to 4 grains three times a day every two or three days) as a means to the early diagnosis and localization of the lesions of pulmonary tuberculosis. It had previously been noted⁴ that in latent tuberculosis iodide of potassium excited cough and expectoration, and that the auscultatory sounds became more pronounced. This method has been employed by Wells, who regards it as free from danger.

¹ New York Medical Journal, February 18, 1899.

² Medical News, January 28, 1899.

³ Journal American Medical Association, February 4, 1899.

⁴ Bull. Gén. de Thérap., February 28, 1898.

Kernig¹ refers to the dulness which may be obtained over the apices of the lungs without pathological change. This is an elementary fact well known to clinical observers, but a source of some perplexity to the beginner. An imperfect expansion of the lung tissue, to which the dulness is most often due, or an undue contraction of the muscles, is readily overcome by the methods well known to skilled clinicians.

In the diagnosis of tuberculosis we must not overlook the fact, pointed out by E. G. Janeway,² that it may be simulated by chronic syphilitic fever. This is important from the point of view of the patient's chances of recovery, which are favorable, as shown by Janeway's cases, if proper treatment be applied. These cases show that fever may attend the late manifestations of syphilis, particularly of visceral syphilis.

The Bactericidal Treatment of Phthisis Pulmonalis. As a broad statement, it may be said that the specific cure for phthisis has yet to be found, and that since our remedies, if they are to be harmless to our tissues, must fail to influence the bacillus, the great lines of treatment must remain essentially simple. Innumerable refinements may be introduced, but our main objects must be an exclusion of additional toxic influences and a cultivation of the highest resistance. The most perfect hygiene will probably be found to be one with fewest complications, whether instrumental or medicinal.

Charles Denison³ has had the happy idea of expressing in percentages the benefit gained from the several forms of treatment. Forty-five per cent. of the gain he attributes to climate and mental influences, to exercise, and to open-air life; 30 per cent. to alimentation, medical treatment, and supervision; and only 25 per cent. to inhalations, local applications, and antitoxin treatment. Doubting whether inhalations ever reach the air vesicles and the ultimate bronchioles, he insists upon the fact that inhalation, or, more correctly, exhalation properly performed, that high altitude treatment and that respiratory gymnastics are all applications of one and the same principle, that of mechanical distention of the air cells. He is skeptical as to the possibility of saturating the blood with creosote to such an extent as to arrest the bacillus in its growth without harming the patient.

THE TUBERCULINS. A great deal of literature has accumulated on the subject of the effects of tuberculins in phthisis, and particularly of the most recent form, Koch's tuberculin TR. There is no escape from the practical significance of the fact that, in spite of existing facilities for rapid dissemination of any important knowledge, we have not

¹ *Zeitschrift f. klin. Med.*, Band xxxiv. p. 332; *American Journal of the Medical Sciences*, October, 1898.

² *American Journal of the Medical Sciences*, September, 1898.

³ Denver Congress of the American Medical Association, 1898.

begun to inject every consumptive patient with tuberculin: (1) It has not hitherto been proved to be a certain cure and (2) it is of somewhat doubtful efficacy as an adjunct to treatment. So great, however, is the importance of the question, that it is indispensable to bring forward the grounds upon which these conclusions are based and to refer briefly to individual results and opinions.

The chief tuberculins now on trial are Koch's tuberculin TR., J. O. Hirschfelder's oxytuberculin, and Denys' tuberculin.

Koch's Tuberculin TR. is said¹ to be regarded at the "Charité," in Berlin, as not more efficacious than other forms of treatment, and this is also the view taken at Gerhard's and Senator's clinics. At the Paris Congress² the majority reported against the usefulness of the remedy, but a favorable view was taken by O. Benoit. Landouzy spoke guardedly as to its possible value in the future as an aid to treatment. In his own six cases he had noted no improvement, but at the same time not any harm. Vaquier's (Villiers-sur-Marne) injections in five children had produced febrile reaction when the dose exceeded 1 mg.; there was no improvement in the pulmonary lesions. Bourhial (Algiers), who had used doses up to 9 mg., had observed febrile attacks and exacerbations, and nothing but ill effects.

Leclerc, of Lyons, in five cases of pulmonary tuberculosis and three of tubercle of bone, had not exceeded 3 mg. doses, but had seen no curative effect whatever, and is in doubt as to whether TR. is altogether harmless.

S. Arloing, P. Courmont, and J. Nicholas, of Lyons, are led by their extensive inquiry to adverse conclusions. In their cases of experimental inoculation TR. equally failed to prevent and to cure. Though free from the reproach attaching to the original tuberculin, that it gives rise to fever-producing, vaso-dilating, heart-poisoning, and nauseating substances, nevertheless it has been found to slow the heart, and seems to have favored the process of tuberculosis along the lymphatic tracts.

In England the treatment has not been extensively tested, but reports have been published by Heron,³ Nathan Raw and Abram,⁴ and McCall Anderson. Heron⁵ sums up his experience of tuberculin thus: "I have never seen in my own practice harm done by the use of this remedy. I have seen it do good in lupus, and in my opinion it helps consumptives on the way to recovery, provided the disease is in a very early stage." Nathan Raw and Abram, out of thirteen cases, cured four completely; these, however, were most favorable cases, and the result was not more favorable than might have been expected from ordinary treat-

¹ Deutsche med. Wochenschrift, 1897, No. 14.

² July 27 and August 8, 1898.

³ British Medical Journal, July 9, 1898.

⁴ Lancet, July 23, 1898.

⁵ British Medical Journal, October 1, 1898.

ment. McCall Anderson, who has had more experience with the old tuberculin than with the new, believes the latter is the safer of the two, because it produces less reaction, and for that reason is, perhaps, less useful as a diagnostic agent. Its cost, however, precludes its use among the poor. While the final dose of the old tuberculin costs less than one penny, that of the new costs seventeen shillings.

W. Freudenthal,¹ of New York, who gives his experience in four cases of pulmonary laryngeal tuberculosis, believes that the antiphthisic serum TR. is deserving of a more extensive trial.

A. Mansfield Holmes,² of Denver, contributes a further report on the use of "antiphthisic serum TR. (Fisch)." He distinguishes a *pretuberculous stage without bacilli*, an *early stage with bacilli*, a *chronic stage*, and a separate group of *cases with "mixed" infection*. There is a refinement of observation in noticing the period when the deficiency in the antitoxin generating power of the blood and tissues is lowered to the point of susceptibility, but when bacilli have not yet effected their lodgement. "The antiphthisic serum TR. administered at that time supplies the deficiency."

Koch's Original Tuberculin and the Late Results of its Use. Boardman Reed³ mentions that tuberculin is still occasionally used in America, with encouraging results; his own observations in 1892 and 1893 were on the whole favorable, though not striking.

Heron⁴ states that out of 37 patients treated in 1891 by Koch's original tuberculin, 5 cases of lupus have all relapsed, and that of the 32 cases of pulmonary tuberculosis 8 have died, 8 are fairly well, and information is lacking concerning the remaining 16.

Hirschfelder's Oxytuberculin. J. O. Hirschfelder, of San Francisco, reports encouraging results, even amounting to cure, and he has found the application of oxytuberculin also curative in cutaneous tuberculosis. His work, begun in 1896, was suggested by Spencer Wells' observation, that opening the belly in tubercular peritonitis may in itself effect a rapid cure, as though the action of the air had oxidized away the tuberculous material, and it has eventuated in the production of oxytuberculin.

The checking action upon cultures of Koch's bacilli is greater than that of tuberculin, for, while an equal quantity of the latter added to broth does not stop them, oxytuberculin in the proportion of 7 parts to 20 suffices to arrest the growth. No pyrexia is set up, even by intravenous injections, and large doses do not produce any disturbance of function. In seventy cases of tuberculosis Hirschfelder injected subcu-

¹ Medical News, February 18, 1899.

² New York Medical Journal, March 25, 1899.

³ International Medical Magazine, August, 1898.

⁴ British Medical Journal, July 9, 1898.

taneously at first 5 c.cm. once a week, then every three days, and gradually raised the dose to upward of 20 c.cm.

Guinard's¹ experiments entirely confirm Hirschfelder's statement that no injurious effects are produced. As some bacterial products set up greater effects when passed through the liver, Guinard injected 20 c.cm. into the mesenteric vein of a dog, but no abnormal symptoms resulted.

Mention should also be made of the favorable report of the Committee of the Cooper Medical College.²

Denys' Tuberculin. Denys promises further details as to the mode of preparation which is undergoing improvements in the Bacteriological Institute of Louvain. The results in dogs inoculated with it were a larger size of the tubercle, which, however, contained few bacilli or none, and presented much fibrous change. No general implication of the liver, spleen, or lungs occurred.

In the human subject, when tried in the last stages, no good resulted from the injections. In the six cases where fever coincided with moderate lesions improvement was noted, and there was much improvement in apyrexial cases, with excavation and without much extension of tubercle in the lung. In this group the expectoration and the bacilli disappeared in 15 cases out of 48; these were regarded as cures; 25 others improved; in 2 the condition was stationary, while 4 of the 6 deaths were attributed to complications and 2 to excessive wasting. No other treatment had been administered. The initial small doses were increased gradually, the injections being suspended for some days after any intense reaction. Denys recommends continuous treatment for six to twelve months. He asserts that in none of the cases could any extension in the lung or invasion of other organs be traced.

THE ANTITOXINS AND SERUM-THERAPY. This treatment is based upon the plausible principle of calling to aid agents actively concerned in the vital processes of the living organism.

It might almost be said that our main treatment of phthisis—viz., the hygienic treatment by light, air, and food—is a modification of serum-therapy in so far as it tends to improve the quality of our own serum and of the tissues which it nourishes. Serum-therapy consists in the injection of natural or immunized sera—a procedure so definite that we might expect from it results equally conclusive. Here, again, unhappily, the results have obviously not been equal to the intentions. For the present the general verdict of practice is, that, without unfairness, our patients may be allowed to trust to other methods less striking to the imagination, but, nevertheless, probably more effectual than the hypodermatic syringe.

¹ Lyon Medical, July 10, 1898.

² Year-book of Treatment, 1898.

Valuable data were forthcoming at the Paris Congress. Maragliano, of Genoa, stood forth as the advocate of serum-therapy. Antitoxins must exist in the blood of animals injected with tuberculin; these antitoxins neutralize the tuberculous toxins which can be extracted by water from Koch's bacilli, and the serum containing the antitoxin is harmless and may bring about a cure, its beneficial effect being shown by deferrescence, disappearance of the bacilli, and healing of the bronchopneumonic deposits.

The General Position as to Serum-therapy was admirably described by the President, Prof. Nocard, of Alfort. The bacillus of Koch, the most refractory of bacilli, variable in its type of virulence, seems to be incapable of producing immunity against itself, so that protection from the inoculation of an attenuated virus, after the fashion of vaccination, seems to be beyond reach. The great hope once placed in the action of the soluble products of the bacilli has been disappointed. The injection, subcutaneous, intraperitoneal, or intravenous, of serum from animals supposed to be refractory, has also failed; indeed, none of our domestic animals are refractory; the difference between them is merely one of degree of liability. Again, antitoxic serum has been found to lack power over the growth of the bacillus. Lastly, the X-rays have been found inoperative.

Landouzy—while referring to Richet and Héricourt's results in rabbits inoculated with avian tuberculosis and subsequently injected intraperitoneally with dog's blood (their mortality being reduced thereby from 55 to 17 per cent.), and referring also to the partial success obtained in man from the use of goat's blood by Bertin and Picq and by Bernheim and Lépine, the immunizing property of the blood residing, as Bouchard showed, in the serum—pointed out that since we know of no absolutely immune animal, an efficient antituberculous serum has still to be artificially provided by a successful vaccination of animals. In spite of numerous attempts, all efforts in that direction have hitherto failed, and no antituberculin has proved uniformly successful in animals or in man. The share of serum-therapy in the treatment of phthisis can only be a partial one, and that share should come early in the history of the case to be thoroughly effectual.

Zanoni,¹ who has studied the effects of Maragliano's "antituberculous" serum, with a view of testing the latter's statement that of 412 cases, 16 per cent. were cured, 48 per cent. improved, 25 per cent. stationary, and 8 per cent. worse, has equally encouraging results to report: 47 per cent. of his cases improved in weight. He thinks that the serum alone was to be credited with the results.

¹ British Medical Journal, January 28, 1899..

Walter James¹ reports that one of his patients was treated for a long time with Maragliano's serum without any harm, but absolutely without any benefit.

The Potency of Antituberculous Serum in Relation to the Date of Immunization. Quite recently C. T. Williams and Horrocks,² after reviewing the work of Richet, Héricourt, Bouchard, Bernheim, Babes, Maragliano, Paquin, Trudeau and others, give us an account of their own experience in nine cases treated at the Brompton Hospital. The serum was obtained by inoculating a horse with increasing doses of tuberculin until no reaction followed the maximum dose (500 c.c.). Injections were made with the serum collected twenty-one days after the last inoculation in cases of acute and of chronic tuberculosis with exacerbation. The results obtained in five patients were not favorable, and included urticarial rashes, rises of temperature, etc. In a second series the serum was obtained seventy-two days after inoculation, small injections, never exceeding 5 c.c., were used, and the cases were selected among those of incipient and limited tuberculosis and of limited excavation. In these cases the results were satisfactory. There was gain in weight and strength and the patients were able to return to their work. The bacilli diminished in number and the diplococci, staphylococci, and streptococci disappeared in the two cavity cases, while in the consolidation cases they diminished in number. They conclude that a further trial should be made in early cases of phthisis, but that in preparing an antituberculous serum for use in the human body a considerable interval must elapse between the inoculation and the withdrawal of the serum, for when it is withdrawn early its effects closely resemble those of Koch's first tuberculin.

ANTITUBERCLE SERUM (Paquin) is loudly praised by Prioleau,³ of Summerville, S. C., both for hypodermatic and rectal administration, further experience having convinced him more than ever of its merits.

W. Thornton Parker,⁴ of Westboro, Mass., was an early advocate of the use of normal non-immunized horse serum as a natural antitoxin not only for tuberculosis but for diphtheria and scarlet fever and for wasting disease. His ideal of treatment for phthisis now is out-door life at the seashore or in the Maine or Adirondack woods, and goat's milk to drink, goat's flesh to eat, goat's blood for rectal injection or for drinking, and goat's blood-serum (normal) for subcutaneous injection, and in some urgent cases by transfusion.

BERLIOZ'S TREATMENT OF PHTHISIS BY MEDICATED SERUM (Séroguaiacol). Berlioz⁵ believes that the amount supplied by the hypoder-

¹ Year-book of Treatment, 1899, p. 44.

² Revue Med. Chir. Soc., March 28, 1899; British Medical Journal, April, 1899.

³ Journal American Medical Association, September 24, 1898.

⁴ Ibid., January 14, 1899.

⁵ British Medical Journal, March 18, 1899.

matic method is insufficient, and he administers 30 grammes of the serum of the ox per rectum, twice daily, adding to it 1 per cent. of the soluble phosphite of guaiacol, which contains 95 per cent. guaiacol. Further efficacy is obtained by adding to the guaiacolated serum 3 per cent. of various organic glycerin extracts, derived from the liver, brain, spleen, and lung. His results are stated to have been most satisfactory in connection with all the symptoms and with the lesions.

ARTIFICIAL SERUM INJECTIONS are recommended by Blache (Paris) for the treatment of tuberculous children. They do not set up any febrile reaction, and are not to be trusted as means of diagnosis. Sirot (Beaune) regards the febrile reaction obtained in adults from 20 c.cm., as a test for tuberculosis, as good as the injection of tuberculin. On the other hand, Hutinel's¹ previous researches had shown that the rise in temperature after saline injections was not confined to tuberculous subjects, and that they were not always innocuous.

THE DOUBTFUL ASPECTS OF THE ANTITOXIN TREATMENT are brought before us forcibly by J. Edward Herman² in his paper on "The Other Side of the Antitoxin Question." "Koch's first tuberculin has been succeeded by an equally useless preparation." This sweeping assertion is based upon Huber and Burghart's statement that tuberculin R. "is neither harmful nor beneficial," and upon "its universal condemnation"³ at the Fourth Congress on Tuberculosis. Trudeau and Baldwin "find none of the tubercle antitoxins of much value." Animals die sooner after the injection of tubercle antitoxin than from inoculation with the culture of bacilli.

H. P. Loomis has also satisfied himself that "none of the antitubercular sera has a marked effect on the disease."

THE CLIMATIC VERSUS THE SERUM TREATMENT STUDIED IN THE ALTITUDE. It is not surprising that an attempt should have been made to improve upon the former results of climatic treatment by the additional use of bactericidal methods. The question as to the relative value of the two plans of treatment is best studied at altitude resorts, and much weight attaches to the testimony of such men as F. G. Waxham and S. G. Bonney, of Denver, who point out that the early cases, in which alone any curative power is claimed for the serum treatment, are precisely those for which climatic treatment is a safe cure, perhaps, as Waxham suggests, by promoting the production of normal antitoxins of the body. They both emphasize the superiority of the climatic cure, and Bonney¹ deprecates any indiscriminate administration of tuberculin in Colorado.

¹ Soc. Med. des Hôpitaux, 1895.

² Medical Record, March 11, 1899.

³ This condemnation seems not to have been passed, *nem. con.*

¹ Journal American Medical Association, October 15, 1898.

Lawrence Flick,¹ of Philadelphia, discusses similar ideas in his reference to "Immunity, Natural and Artificial," as the fundamental principle of treatment. Denison, of Denver, also regards the serum treatment of tuberculosis as a beautiful dream, the realization of which still remains to be devoutly hoped for.

FISCH'S ANTIPHTHISIC SERUM. Possibly failure may hitherto have been due to the employment of too little or of inadequate antitoxic serum. This explanation is suggested by Fisch,² of St. Louis, Mo., who refers to his own previous experiments, published in 1897, and to the work which has since then been accomplished by Behring and his pupils. Among the latter von Lingelsheim has introduced the *intracerebral injection* method (with death, not pyrexia, taken as the characteristic point of the toxic reaction), and has shown that $\frac{1}{180}$ of the subcutaneous or intraperitoneal dose suffices to kill by this means. Fisch has adopted this method, and he corroborates the conclusion previously elaborated by Behring, that there is no difference in the nature but only in the virulence of the bacterial poison contained in various tuberculosis toxins or tuberculins. Their toxicity being slight only, the best results cannot be expected except from high doses of the most potent among them.

The most likely source of an efficient antitoxin would be an animal susceptible to tuberculosis. The serum of a cow treated by Behring by intraperitoneal injections, and that of two cows treated by Fisch, all of which were cured, were found to possess marked antitoxic potency.

In conclusion, Fisch says: "All antitubercular sera if properly prepared are antitoxic, but the greatest potency belongs to those for the preparation of which the highest immunizing doses of toxin have been used."

The Surgical Treatment of Phthisis. The slow progress of pulmonary surgery is not surprising, having regard to the difficulties with which it has to contend. Not the least among them, as Tuffier³ has recently insisted, is the difficulty of *localizing* the pulmonary lesions. Indeed, he considers this to be almost greater than the difficulty of the operations. This conclusion he has derived from a study of all the accessible cases⁴ of pulmonary surgery which he had laid before the Moscow International Medical Congress.

ARTIFICIAL REDUCTION OF THORACIC SPACE. Ideas almost identical with those which had occurred to myself several years ago have been conceived and carried out by Norman Porritt.⁵ The new lines

¹ Loc. cit., October 1.

² Journal American Medical Association, April 8, 1899.

³ Soc. Méd. des Hop., January 27, 1899; Lancet, April 8, 1899.

⁴ British Medical Journal, February 11, 1899.

⁵ Lancet, November 19, 1898.

which he recommends are that portions of ribs should be removed, both back and front, from the upper part of the chest, enabling the floating pieces left behind to be drawn bodily toward the spine or in any other direction determined by the shrinking of the lung. It is not necessary to touch the first rib, and possibly the fourth may be left untouched. Three cases are given. In the first, life was prolonged; in the second, death occurred on the second day, with incessant vomiting; the third patient died of pneumonia on the sixth day. Porritt recommends that the operation should be done early without waiting for a cavity to form. With the latter recommendation I should hesitate to concur.

ARTIFICIAL PNEUMOTHORAX. Edwin Klebs,¹ of Chicago, rather despondingly inquires, "What is to be expected from the surgical treatment of tubercular lungs?" The proposed treatment by artificial pneumothorax, referred to by Murphy, cannot, he thinks, be supported by our present knowledge. On the other hand, some of Murphy's results in the partial or total extirpation of one lung are great encouragements, and it is to be hoped that we may yet be given the facility of inspecting the thorax to some extent in the same way as the abdomen is now explored.

INCISION AND DRAINAGE OF PULMONARY CAVITIES. Murphy's contribution in his Denver oration to the surgery of phthisis, and particularly to that of pulmonary cavities, should be consulted. Bozzolo² describes two successful cases of surgical treatment of tuberculous cavities of the lung. In one of the patients, a boy with a cavity in the lower part of the right lung, an operation was performed by Professor Carle. The Röntgen rays had shown that the heart was displaced, and the base of the thorax was dark, as if from localized empyema, but exploratory punctures had given no result. Pleural adhesions were found and the cavity, which was situated higher than percussion seemed to indicate, was incised and drained; the patient rapidly recovered and is now quite well. In the second case, that of a man, aged thirty-six years, with a cavity in the right lung and purulent expectoration, but no Koch's bacilli detected, the lung was incised, but there were no adhesions, and the man nearly died from pneumothorax succeeding the operation. Two months afterward a larger and higher incision was made, adhesions being encountered. Exploratory punctures after many attempts resulted in the discovery of a small cavity containing pus, situated at some depth and communicating with another larger one. Drainage was followed by complete recovery. Both these patients were present at the meeting.

The Röntgen Rays in the Treatment of Tuberculosis. Treatment by means of Röntgen rays, first suggested by Glover Lyon, has been

¹ Journal American Medical Association, July 16, 1898.

² Gazzetta degli Ospedali, July 17; Lancet, August 6, 1898.

tried by various observers. Its diagnostic uses were discussed at the Paris Congress and in various papers.¹

Absolute failure has been the uniform result of this form of treatment in the experimental tuberculosis of animals. Rodet and Bertin-Sans' guinea-pigs fared badly as regards general nutrition, and succumbed early. Extensive local ulcerations occurred under the direct influence of the rays. A tuberculous invasion was promoted in the viscera but restrained in the lymphatic glands, where even regressive changes were observed.

G. Bergonié (Bordeaux) and Teissier (Paris) are no less positive as to the absence of any favorable results in their own experiments on animals, and in those of Lortet and Genuod, Fiorentini and Laureschi, Müksano, and others, their clinical observations were made on cutaneous, on articular, and on pulmonary tuberculosis. (1) In *lupus*, if only the dermatitis set up by the X-rays can be held within bounds—but the difficulty is to limit it—its effects are favorable. (2) In *tuberculous arthritis* they could identify none of the events (except the local inflammation) with the action of the rays. (3) No favorable influence whatever, but in some cases perhaps pneumonic or digestive complications, were recorded during the period of treatment in *pulmonary tuberculosis*, for the cure of which the method is proved to be useless.

Von Sinapius, in a short publication on the subject, gives a favorable statement of the results of his treatment of twelve cases. The treatment consisted in daily sittings of an hour, during which the patient's bared chest was exposed to the perpendicular rays, which were allowed to play for ten minutes at a time upon its various regions. The cough and expectoration improved, and the physical signs are said to have diminished; but no after history is given.

Electricity in the Treatment of Phthisis. Wassilieff² has used *static electricity* for the last four years in the treatment of pulmonary disease, with sufficient success to cause him to speak of the possibility of cure. The method consists in inhalations from the discharge of electricity, which is directed toward the mouth of the insulated patient. Dryness of the throat and giddiness are experienced, and there may be slight perspiration. After a few sittings the expectoration is said to diminish and the general condition to improve.

Treatment by Inhalations. Murrell³ lays down an important suggestion when he says the best way of finding how to treat the bacillus tuberculosis is to obtain the bacilli expectorated, to cultivate them and to pass over them various volatile substances, until one is found which

¹ Hugh Walsham. *Lancet*, October 15, 1898.

² *Klin. Ther. Woch.*, xxii., 1898; *Year-book of Treatment*, 1899.

³ *British Medical Journal*, January 28, 1899.

will arrest their growth. This should then be administered by inhalation to the patient. His paper details experiments conducted *in vitro* and by inhalation. The cultivations were not affected by oil of cinnamon or oil of peppermint passed over them. *Formaldehyde* was next tried. Air conducted through a 6 per cent. solution was allowed to pass over the tubes containing the bacilli. No growth occurred and subcultures failed also. When removed after four, six, or ten days none of the tubes showed any growth up to six weeks from the date of inoculation. Clinically the results were also satisfactory. The air passed through a 6 per cent. solution was inhaled once or twice a day. Some sensation was produced at the back of the throat, and sometimes violent paroxysms of cough. Nevertheless, the results were satisfactory. Cases are given in which some of the patients had previously inhaled oil of cinnamon or peppermint without benefit.

Delancey Rochester makes the suggestion that inhalations could easily be carried out through a cigar-holder lightly packed with absorbent cotton. A few drops of the following inhalant might be useful: Menthol, 1 part; spirits of chloroform, guaiacol, terebene, eucalyptol, and thymol, of each 2 parts.

We owe to Frederick W. Smith, Secretary of the Tuberculosis Committee of the New York State Board of Health, a compact and practical paper on the general principles of prophylaxis and of treatment. He lays stress upon the value of the inhalation method, and mentions favorably the inhalation prescribed by Burroughs, of Asheville: "Menthol, 5 grains; terebene, oil of pine needles, and eucalyptus, of each 20 drops, and add thereto 20 drops of creosote in one-half ounce of glymol."

Hénocque attributes a genuine value to the ozone generated in *turpentine vapors*. With one hour's turpentine inhalation every four or five days, three of the dogs inoculated by Richet and Héricourt survived, while all the control animals died in about thirty-five days.¹

The Medicinal Treatment of Phthisis. SODIUM CINNAMATE. Albert Mann,² of Denver, describes fully the sodium cinnamate *intracarcinous treatment*. The preparation and dosage of the aqueous solution are given in detail: 1 or 2 minims only of a 1 per cent. solution is the initial dose, and this may be increased gradually to one-fourth or even one-third of a grain, a dose which should seldom be exceeded. The usual frequency is one injection every forty-eight hours or two or three times a week. An elastic bandage is placed round the arm and the median basilic or cephalic vein is injected with a sterilized needle. Two cases are given in which improvement was traced by Mann to this

¹ Soc. de Biologie, November 12, 1898; Journal American Medical Association, January 4, 1899.

² Medical Record, February 4, 1899.

form of treatment, which was applied with intervals of rest for several months.

CINNAMIC ACID. A. Landerer¹ has had eight and a half years of experience of cinnamic acid in tuberculosis. He believes in its curative value in the early stages. It causes an intense hyperleucocytosis with polynuclear and eosinophile cells, which seem to be limited to tuberculous subjects. Several cases with cavities were cured as well as the early cases; but galloping phthisis and cases with hectic fever were not affected. Intestinal tuberculosis in its early stages was invariably cured (seventeen cases) as well as bacillary adenopathy. Sodium cinnamate or cinnamylate dissolved in salt solution and injected into the veins every forty-eight hours is the most effectual form of treatment. It is to be continued for four to six months and to be resumed after an interval of one month. The first dose of the cinnamate ($\frac{1}{2}$ milligramme) is increased by a milligramme each time up to 25 milligrammes.

CREOSOTE AND ITS DERIVATIVES. Savoire² provides us with important statements respecting the properties of creosote. It is hardly poisonous, does not disturb the functions; given in large doses it produces increased appetite and proves generally favorable in phthisis, though it does not arrest the growth of the tubercle bacillus even in a 30 per cent. concentration; it would appear, however, to have a chemical effect upon the bacillary toxins. He attributes the favorable effects first to a bactericidal effect upon the associated streptococci, pneumobacilli, etc., to the stimulation of metabolism and of phagocytosis, and to the phenol-like effect upon the toxins. Creosote has been used subcutaneously (1 in 15 of olive oil), to which myrtol or eucalyptol may be added—as an inhalation (6 to 10 grammes of 33 per cent. alcoholic mixture)—and by ingestion in oily solutions or milk, in increasing doses up to 300 drops.

Lamplough, from a study of 100 consecutive cases treated with increasing doses of pure beechwood creosote, has arrived at the following conclusions: The drug can be given in amounts varying from 120 to 240 minims daily without, usually, any gastric disturbance. It may be administered in cod-liver oil or alcoholic solution, or in the “creosote chamber,” or by the ori-nasal inhaler. The cough, expectoration, and sweats decrease and the physical signs improve, while the bowel is probably disinfected. There is no hæmoptysis or irritation of the genito-urinary tract.

Chaumier considers it efficacious, but only in conjunction with open-air treatment. He does not think well of *guaiacol*, but favors *creosolol*, which he regards as efficacious as creosote without its drawbacks, so that

¹ La Presse Médicale, January 7; Journal American Medical Association, February 18, 1899.

² Wiener klin. Rund., January 1, 1899; Medical Record, January 4, 1899.

large doses can be borne without inconvenience. Slight warming will make it more fluid, and it can then be mixed with hot milk or other vehicles in doses of a teaspoonful two or three times a day. *Carbonate of guaiacol* given as a powder (75 grains daily) resembles creosotal in its action.

J. E. Squire¹ has given guaiacol in capsules in doses not exceeding 50 minims. The urine, even with large doses, did not give a precipitate with hydrochloric acid, such as found by Leifert.

Harrington Sainsbury points out that since in the manufacture of creosotal the guaiacol is removed, and since pinewood creosote is said to contain no guaiacol, and yet acts as well as the beechwood creosote, it is probably erroneous to attribute to guaiacol any share in the good results obtained by creosote.

The beneficial effects obtained in phthisis from guaiacolate of piperidine by Chaplin and Tuncliffe² are confirmed by Acland and Martincau's³ experience that it is safe, well borne, and without unpleasant after-effects, and that it improves the general condition of the patient.

Eosot and geosot are the valerianates of creosote and of guaiacol, the favorable action of which is vouched for by J. W. Wainwright, of New York,⁴ both in phthisis and in gastric irritability.

IODINE INJECTED HYPODERMATICALLY is advocated by Ingraham.⁵

The formula which he recommends is :

R.—Iodine	.	.	.	.	.	.	.	.	.	gr. $\frac{1}{2}$
Bromine	.	.	.	.	.	.	.	.	.	gr. $\frac{1}{4}$
Phosphorus	.	.	.	.	.	.	.	.	.	gr. $\frac{1}{60}$
Thymol	.	.	.	.	.	.	.	.	.	gr. $\frac{2}{32}$
Menthol	.	.	.	.	.	.	.	.	.	gr. $\frac{2}{32}$
Sterilized oil	.	.	.	.	.	.	.	.	.	5j.

He dwells upon the value of menthol and thymol as germicides nearly equal to carbolic acid, and upon the fact that menthol is eliminated through the lungs. The injections are made principally in the shoulders.

ICHTHYOL. Combemale and Desoil⁶ report that during fourteen months all the phthisical patients (110) in the Charité Hospital at Lille were treated with ichthyol. The daily dose at the beginning of treatment was 1 gramme, but this was gradually increased to 4 grammes, unless diarrhea supervened. When these doses of ichthyol were tolerated there was a marked improvement, which rarely, however, manifested itself before the end of a month. No improvement occurred in two-thirds of the patients.

¹ Lancet, April 9, 1898.

² British Medical Journal, January 16, 1897.

³ Ibid., July 16, 1898.

⁴ Journal American Medical Association, October 8, 1898.

⁵ Medical Record, October 1, 1898.

⁶ Echo Méd. du Nord, April 17, 1898, and Medical News, July 30, 1898.

Ichthyol is recommended in a 1 to 2 alcoholic solution in doses of 30 drops several times daily by Bramthorne.¹ The dose is increased daily by 2 drops until it reaches 150 drops per day. He finds it beneficial in cases of atonic dyspepsia, and, therefore, useful when creosote is contraindicated; it may be alternated with the latter.

CAMPHOR. Phthisis is treated by Bruno-Alexander² with oil of camphor, 0.1 to 0.2 c.cm., corresponding to 0.01 or 0.02 of camphor. Administered subcutaneously it checks the fever, the sweats, and the purulent discharge, and seems to improve the appetite, while the cough is also lessened. The treatment is applied for four to six weeks without intermission, and resumed after an interval of one to four weeks. In non-feverish cases 0.3 to 0.5 c.cm. of the oil of camphor may be given for eight to fourteen days. He has given as much as 0.1 gramme of camphor at one dose daily. Hæmoptysis is not a contra-indication.

PETROLEUM EMULSION AND ITS NUTRITIVE VALUE. From R. Hutchinson's³ experiments it may reasonably be concluded that petroleum is not absorbed in the human intestine, and that it can in nowise be regarded as a food or a substitute for cod-liver oil. Nor has petroleum any remote action, say, upon the lungs. It is conceivable that if crude petroleum were employed some of the volatile substances contained in it might enter the blood and be excreted by the mucous membrane of the air passages, but the purer the petroleum used the less chance is there of any such occurrence.

Symptomatic Treatment. THE TREATMENT OF COUGH AND OF RETCHING. Otis tells us that cough can be controlled to a certain extent by training, such at least is the tradition in German sanatoria. Fresh air and plenty of it is Ransome's remedy for cough, especially when spasmodic. A 1 per cent. solution of codeine is the most useful drug in doses of one or two teaspoonfuls.

Mays has administered strychnine in heroic doses, in one case $\frac{1}{6}$ grain four times daily for two months. Smaller doses, $\frac{1}{32}$ to $\frac{1}{24}$ grain, according to Williams, are a specific against the retching.

Delaney Rochester finds drachm doses of oxalate of cerium successful in excessive vomiting. Hydrocyanic acid and chloroform water are also useful in bronchial irritation.

Oxygenated water, diluted in the proportion of a tablespoonful to a litre of water, mixed with some wine or milk, has been used, it is said,

¹ Centralbl. f. d. Gs. Therapie, June, 1898.

² Medical Press and Circular, March 15, 1899.

³ "Is Petroleum Emulsion of any Nutritive Value?" British Medical Journal, March 25, 1898.

with almost unvarying success in the vomiting of tuberculosis and of pregnancy.¹

S. Knopf,² in addition to respiratory exercises, which he regards as very important, has recommended for some time past "the sodium chloride treatment"—*i. e.*, the abundant use of salt with food. He thinks that it is possible by this means to render the expectoration less tenacious and to increase the well-being of the patient.

Heroin, the diacetic ester of morphine, a "respiratory sedative," is found by Dreser³ to slow and deepen the respiration and to increase the respiratory capacity. Although more sedative than morphine and codeine, it is ten times less convulsant than the latter. The respiratory centre is not dulled by it to chemical stimuli as much as to those arising from the mechanical condition of the lung. The heart and vasomotor system are only secondarily affected. Clinical data are contributed by Floret,⁴ whose sixty cases had without exception experienced relief to cough and pain in the chest; in three cases of asthma the benefit was marked. The powder was administered in daily doses of $\frac{1}{13}$ to $\frac{1}{3}$ of a grain, or the same amount in dilute acetic solution.

My experience of heroin agrees with that of Manges,⁵ of New York, who recommends the smaller dose ($\frac{1}{20}$ of a grain) when the drug is administered to aged patients and in the advanced stages of tuberculosis.

Strube⁶ administered heroin in fifty cases, chiefly of phthisis (0.005 gramme in pill or powder, in the evening—never more than 0.01 gramme at a dose—or 0.025 gramme daily). His tables support the contention that it reduces the frequency of respiration in dyspnea; the sedative effect was manifest, the pulse remaining unaffected or only slightly slowed. Less powerful than morphine as an anodyne, it possesses a general narcotic effect.

Dionin, or *ethylmorphine hydrochlorate* ($C_{19}H_{23}NO_3HCl + H_2O$), is another morphine derivative for which a place is claimed in pulmonary therapeutics. Korte finds that while it does not disturb the digestion and nervous system, it possesses in a milder degree the advantages of morphine, and is a stronger sedative than codeine, which is a methyl derivative. It is administered at bedtime in watery solution or in syrup. The irritable cough of phthisis is relieved, the expectoration loosened, and the night-sweats lessened. It is also beneficial in bronchial asthma. Dionin, 0.3, aq. dest., 20, is a convenient solution, of which 15 drops may be given at a dose.

¹ Journal de Pharm. et de Chimie, 1898, No. 7, and the Medical and Surgical Review of Reviews, November, 1898.

² Medical Record, February 4, 1899.

³ Dreser, Heroin, Therap. Monatshefte, September, 1898.

⁴ Ibid.

⁵ Journal American Medical Association, December 10, 1898.

⁶ Berliner klin. Wochenschrift, November 7, 1898.

Peronine. A. Mayor¹ and West report on peronine, a benzylic ether of morphine ($C_{21}H_{25}NO_3$), and upon its hydrochlorate, which have been recommended for the cough of phthisis, bronchitis, and pertussis, as substitutes for codeine (in doses of $\frac{1}{300}$ to $\frac{1}{150}$ grain).

THE TREATMENT BY COUNTER-IRRITATION in its various forms is clearly inadequate for the cure of phthisis; and if in the shape of blisters it should interfere with the freedom of respiration, it may be regarded as open to objection; as a *prophylactic*, it was in early days largely practised. The old-fashioned notion, which was supported by Graves, that phthisis might be averted in the predisposed by the use of setons beneath the clavicles at puberty, will, doubtless, come up again for reconsideration in the new light of modern science. For the present "counter-irritation," as the *Lancet*² remarks, "is still the prevailing notion in England and in France, where Professor Jaccoud especially has extolled it. It is doubtful whether it does any good as a routine treatment, although it may have a temporary value where there are pleuritic complications or pains of any kind. The German plan is by friction, towelling, tepid or cold sponging, douching, and baths to keep the skin in a perfectly hygienic state, to 'tone' it, to check night-sweating and to make the patient impervious to chills. We cannot doubt that, speaking generally, this plan is much to be preferred to the routine application of iodine or other counter-irritants." Nevertheless, as a temporary measure specially directed to the cure of a superadded catarrh, or for the control of a cough, its assistance is not to be despised.

COUNTER-IRRITATION OF THE VAGI. The same principle has been recently revived and extended by T. J. Mays³ in a novel direction. Instead of applying counter-irritation over the lung he applies it over the vagus by means of hypodermatic injections of nitrate of silver. Forty cases in all were treated in this way, 7 being incipient, 18 advanced, and 15 far advanced cases. In many of the incipient and in some of the advanced cases there was a rapid improvement in the physical signs and in the weight. The injections may play an important part in the therapeutics of asthma, chronic bronchitis, and in the pre-phthisical stage in the young, which is indicated by loss in weight, anæmia, etc.

The Treatment of Hæmoptysis. This is in a very unsatisfactory state. We have, however, abandoned the use of ergot and of mere astringents, which formerly blocked the way for a rational treatment. The latter is now assured when morphine can be administered without delay to quiet the cardiac excitement and to put a stop to the blood-pumping action of

¹ Rev. Med. de la Suisse Rom., June 20, 1898.

² January 21, 1899, p. 173.

³ Boston Medical and Surgical Journal, February 9; Epit. British Medical Journal, March 25.

the cough upon the hemorrhage, and when concurrently vascular tension is reduced by quickly acting purgatives as well as by morphine itself. The success of this method is great in many severe cases. But in certain predisposed individuals with chronic phthisis the hemorrhage seems to be inveterate. The method described may fail and so may a variety of other remedies.

Venesection, which had formerly been resorted to, was revived by Dr. Huggard, of Davos. I have also used it twice in the same patient at a long interval of time, but on the second occasion it was not successful, and the frequent administration of tincture of hamamelis (1 drachm every two hours for several days) seemed to answer better than any other method.

Chloride of calcium has not hitherto fulfilled our expectations in hemorrhage or in aneurism, but our hopes are now raised in another direction, that of the *gelatin method*.

Our difficulty probably arises from the fact that while we are endeavoring to treat the hemorrhage it is the unhealthy ulcerating surface which needs our treatment. Surgical interference being usually contraindicated, there are, in the ordinary case, but two ways in which we can reach the seat of ulceration: directly through the atmosphere by means of inhalations, and indirectly through the nutrition of the body; and here the indication as regards the supply of food and of stimulants seems to be different from that which applies to ordinary hemorrhages.

HEPATIC EXTRACT IN HEMOPTYSIS. Berthe¹ has undertaken the clinical study of the method introduced by Gilbert and Carnot of coagulating blood by liver extract. He seems to have obtained good results in tuberculous cases with recurrent hæmoptysis, and also in cases of epistaxis and metrorrhagia. The liver extract (12 grammes) may be administered by the mouth or by the rectum. Desiccated liver substance may be used, or alcoholic, watery, or glycerin extracts. Per rectum, 150 grammes freshly emulsified liver substance may be employed as an injection. We shall need further reports before adding this method to the list of our remedies.

HYDRASTIS CANADENSIS is recommended by Gabrilowisch² for the hæmoptysis of chronic pulmonary phthisis. Thirty drops three times a day for two weeks, then twice a day for the succeeding weeks.

According to Gabrilowisch,³ pulmonary hemorrhage occurs with greater frequency in February, March, and October. He has studied the records of 300 patients for a period of five years, and finds that nearly all the hemorrhages occur in the spring or in the autumn.

¹ Journ. de Med., October 10, 1898.

² Rev. Gen. de Path. Int., February 5; Journal American Medical Association, March 25, 1898.

³ Berl. klin. Wochenschrift, January, 1899; Medical News, March 11, 1899.

For the control of hæmoptysis Otis trusts less to local applications than to measures tending to lower the pulmonary vascular tension. Rest, opium, and salt, ligaturing the extremities, and from $\frac{1}{150}$ to $\frac{1}{50}$ grain of atropia subcutaneously are the best remedies. He has little faith in astringents, the best, however, would be 5-minim capsules of turpentine, 5 to 20 drops of erigeron, and 20 to 30 drops of fluid extract of *hydrastis canadensis*.

The Treatment of Night-sweats. Salter suggests that since the night-sweats of phthisis contain tuberculin in notable quantity, their rational treatment would be to encourage sweating by various means.

Delancey Rochester,¹ of Buffalo, in his paper on "The Cases of Pulmonary Tuberculosis that Cannot Go Away from Home," read at the fifteenth annual meeting of the New York Medical Association,² also refers to the idea first suggested by Charles G. Stockton, of inducing sweating as a means of controlling the profuse night-sweats of phthisis. This treatment is not one likely to come into favor.

CAMPHORIC ACID in half-drachm doses an hour before bedtime has been tried by Coston,³ and has never failed in checking night-sweats, both in tuberculosis and in rheumatism. Camphoric acid is best taken on the tongue and washed down with water or milk. Otis also recognizes the value of camphoric acid. He places it at the head of the list, and thinks that picrotoxin, $\frac{1}{100}$ to $\frac{1}{50}$ of a grain; agaricin, $\frac{1}{12}$ of a grain, and atropine, $\frac{1}{60}$ of a grain, come next in the order of their efficacy.

ACETATE OF THALLIUM. Combemale⁴ recommends acetate of thallium pills in doses of one centigramme, to be taken an hour before the sweating, not to be repeated for more than four days in succession.

GUAIACOLATE OF PIPERIDINE⁵ is stated to be safe and well borne and to have given favorable results.

Hygiene and Diet. HYGIENE VERSUS DRUGS IN PHTHISIS. A paper by C. L. Minor,⁶ of Asheville, preaches a doctrine which is becoming more and more recognized. The doctor as well as the patient must work hard if the case is to do well. He deplors the too common abuse of exercise; his rules would be "exercise short of the point of fatigue," and "no exercise with a temperature over 100.4° F." Muscular exercise is to be gradually increased. He dwells specially upon pulmonary gymnastics, and thinks well of that form of Indian-club swinging called the double figure-of-eight.

Again, Edward Otis⁷ contribution on "Some Modern Methods of the

¹ Medical Record, October 22, 1898.

² Medical Record, October 22, 1898.

³ Therapeutic Gazette, March 15, 1899.

⁴ La Semaine Médicale, February 28, 1898.

⁵ British Medical Journal, July 16, 1898.

⁶ Medical Record, October 29, 1898.

⁷ Boston Medical and Surgical Journal, July 14 and 21.

Treatment of Phthisis and its Symptoms," recommended for publication by the Massachusetts Medical Society, before which it was read June 8, 1898, presents us with an admirable compendium of the principles of the climatic, hygienic, and dietetic methods: (1) Out-door life in pure air free from smoke; (2) abundant alimentation of food properly selected and prepared, rich in fats and carbohydrates; (3) rest or exercise, or both, according to the individual condition; (4) hydrotherapeutics are specially dwelt upon, including warm baths, ablutions, cold sponging or friction, wet-pack, and douches. The cold friction may be partial and applied while the patient is in bed. Cold compresses, known as Winternitz's cross-bands, covered with flannel, are thought highly of on the Continent. He is an advocate for the hygienic rather than for the medicinal cure, but he allows that general and special medication should co-operate to relieve any interfering complication.

OVER-FEEDING AND OVER-STIMULATION. *The artificial training of the appetite* in its most legitimate form is carried out by a judicious combination of muscular exercise, whether passive or active, of rest, and of out-door life. Within certain limits an increased frequency of meals, provided they are regular, will establish a habit of recurring readiness for food. Drugs also lend us welcome assistance. But mention should be made of a new method which reminds us of one of the advantages claimed by Kinnear for the systematic use of the spinal ice-bag.

Cryotherapy. The formal opening of the Paris Congress was pre-ceeded by a demonstration by Dr. Ribard¹ on "Cryotherapy," a means of stimulating the appetite by applying considerable cold to the epigastrium and hepatic region for half an hour before the principal meals. Cotton-wool is interposed between the skin and the packet, containing 2 grammes of "carbonic snow," so that while the temperature of the snow is -83°C , that of the skin should not be lower than that of 5°C . The effect on the appetite is regarded by Ribard² as the expression of a demand for fuel to keep up the body heat. Letulle has obtained better results in the case of tuberculosis with this than with any other method.

Alcohol has been given a prominent place in the dietetics of phthisis by Dettweiler and other German authorities in the shape of wines, both light or heavy, with meals, and as spirits diluted with water or milk. Individuals differ so widely in their reaction to alcohol that it is impossible to lay down any general rule which could not be enforced without detriment to the few. Over-stimulation by alcohol has its dangers in phthisis both in the direction of bronchial irritation and in its action upon the heart and bloodvessels. The congestion of the liver, to which

¹ British Medical Journal, August 13, 1898.

² Ibid.

it gives rise, is attended with various evils, and the heart is not strengthened but debilitated by its unlimited use.

The perfection of hygiene seems to me to be an absolute essential for the cure of phthisis. This principle is now fully recognized in respect to the breathing of pure air; is it less important and to be neglected in connection with alimentation? I cannot regard with confidence any method which forcibly interferes with the natural play of the physiological functions.

If over-feeding is bad for a man in full health, can it be good for him when reduced by tubercle? There is a serious responsibility in straining to the utmost the gastric function and in courting the risk of a digestive breakdown. Over-dosing with alcohol may be put forward as a safeguard against that eventuality. It is, however, much more likely to complicate than to relieve the labor of digestion, and it constitutes a further departure from "physiological rectitude." As in all forms of anemia and debility, wine in dietetic doses is invaluable, but I should be in favor of keeping its supply within the limits of the tonic dose, which does not introduce any toxic complication, just as in the matter of alimentation the stomach should not be turned into a means of oppressing the liver and the nervous system. Fully recognizing the special need for high feeding in phthisis we should the more jealously watch over the integrity of the mechanisms by which this can be permanently secured. Let us increase not only the nutritive value of the foods we supply, but in like proportion also the ease with which they can be assimilated.

Debove's Method. R. W. Willcox¹ deals with the subject of *feeding* in phthisis, and describes the "Debove method," which he himself uses in cases of tuberculous laryngitis where swelling is painful. After cocaine has been applied to the larynx the stomach tube will convey without pain enough food to sustain the patient for twenty-four hours. Willcox regards the true diet of consumptives to be "meat, starches, and fats, with an excess of the latter and a certain amount of phosphates."

The method is of undoubted use in special cases. In the dysphagia due to painful tuberculous laryngitis and in the anorexia of debility it is often invaluable; but its employment in other cases is superfluous. Our zeal in over-feeding phthisis should be tempered by wisdom.

As Minor, of Asheville, N.C., well says in his paper on "Hygiene *versus* Drugs," "The consumptive who has been overfed, who has had rammed down his throat more than he could digest or assimilate, and whose stomach has 'gone on strike,' is no rare sight, and should warn us from

¹ Medical News, July 7, 1898.

falling into the error of taxing a delicate organ beyond its powers of endurance in the hope of increasing nutrition."

THE ARTIFICIAL METHODS OF ALIMENTATION. Debove's method of introducing food into the stomach through the stomach tube has already been referred to. It is the most important of the methods in question. Rectal feeding and subcutaneous and intravenous alimentation are accessory methods not likely to come into general use.

Rectal Alimentation. J. Whittaker¹ endeavors to increase the number of red cells, in imitation of the results of the altitude treatment, by the administration of blood per rectum. He administers the blood by enema, diluting a pint of blood with a pint of water containing one-half ounce of sodium bicarbonate and of sugar of milk with one ounce of common salt. This is to be thrown high up, and, he finds, is well retained. The systematic use of the remedy leads to gain in weight and nutrition, especially in anæmic subjects.

Bouteron² seeks to provide for pulmonary antisepsis in combination with alimentation by nocturnal rectal injections containing creosote (5 to 20 drops), 1 gramme of yolk of egg, and 60 to 100 grammes of olive oil, or from 0.5 to 1 gramme of guaiacol dissolved in 50 grammes of oil. Or suppositories may be used consisting of 0.3 to 5 grammes of creosote or 0.2 to 5 grammes of guaiacol and cocoa-butter.

Subcutaneous and Intravenous Methods of Alimentation have hardly passed beyond the experimental stage, and, until better results have been obtained in animals, are not suitable for adoption in the human subject. Lilienfeld³ provides us with the latest information on this subject and with his own experimental results.

Since the above lines were written Muggia's⁴ favorable results with the subcutaneous injection of yolk of egg instead of lecithin in cases of malnutrition in children have been reported. The injection is prepared by mixing the yolk of a fresh egg with one-third of its weight of physiological sodium. The initial dose of the solution is 1 c.cm.; the injections are made in the buttocks or lumbar region. There is no local or general reaction provided the injection be made aseptically. Some gentle massage is practised after the injection. The quantity injected each time may be increased up to 10 c.c., but this amount should never be exceeded. The number of injections should not be less than twenty. Improvement takes place more rapidly than when lecithin is employed.

Aerotherapeutics: The General Influence of Sunlight and of Air
The direct destructive action which sunlight and air exert upon the

¹ Denver Meeting of the American Medical Association, 1898.

² Presse Méd., February 15; Journal American Medical Association, March 25, 1899.

³ Zeitschrift f. diät u. physikal Therapie, Bd. ii. Hft. 3, 1899.

⁴ La Semaine Médicale, xviii., and British Medical Journal Epitome, 29, 99.

bacillus outside the body cannot be expected in the case of bacilli buried in the depth of the tissues. These can only be influenced indirectly, and any gain can only be slowly secured. On the other hand, prophylaxis is directly aided by sunlight and ventilation and the germs harbored by dark and dusty corners can be readily disposed of by these remedies of nature.

HELIO THERAPY. Apéry's¹ expectations from an intensification of the solar rays through burning glasses outstrip the results which are sought at Veldes. Although he is mistaken in believing himself the first proposer of this method, originally given to us by Archimedes, of Syracuse, he insists rightly that the microbe of tuberculosis fades away more rapidly and more readily under the direct action of solar rays than by any other means. He does not provide us with sufficient evidence as to the results actually secured. Solar light and heat are not, we are told, the only resources available through lenses. Apéry also indicates spectrotherapy as a therapeutic agent.

IMMUNITY AGAINST TUBERCULOSIS IN HIGH ALTITUDES. The favorable combination of high altitude and absolute as well as relative dryness of air, with low atmospheric pressure and almost constant winds, greatly facilitate evaporation in the Denver climate. W. C. Mitchell and H. C. Crouch² regard the resulting struggle for moisture-compensation in the lungs as one of the factors of immunity against tuberculosis and of the arrest or retardation of disease which has been observed. The low atmospheric pressure of extremely high altitudes would bring about great dilatation of the capillaries of the skin and mucous membrane—a mechanical hyperemia—and even hemorrhages. This tendency must also be taken into account in explaining the results of moderate altitudes. Beside these, two great factors help to explain immunity in high altitudes: the influence of the solar rays, which destroy the virulence of exposed tubercles, and the bracing effect of the climate, which fortifies the organism against the invasion of the bacillus. The authors' experiments prove the immunity to be chiefly attributable to the second of these factors.

W. H. Weaver,³ writing on the "Specific Action of Air in Consumption," puts before us again his method of "Forceible Alveolar Expansion,"⁴ consisting in taking a deep inspiration, to be followed by closure of the glottis and bearing down, as if straining at stool, for a few seconds, so as to increase the tension of air in the upper chest, which in phthisis is supposed to be ill-ventilated. This can be easily done for a few min-

¹ Société Française d'Hygiène, December 9, 1898; *Lancet*, February 4, 1899.

² Denver Congress, *Med. Record*, June 18, 1898.

³ *Journal American Medical Association*, January 14, 1899.

⁴ *Ibid.*, May 4, 1895.

utes every two hours, and a nebulizer may add interest to the proceeding; or oxygen gas may be used. The advantages claimed are those of an improved general and local oxygenation; and the results have been in a total of fifty-six cases, 66 per cent. of all cases cured, and almost 80 per cent. cured among the first-stage and second-stage cases, and Weaver adds that if all first-stage cases, and over half of the second-stage cases, can be cured at home, there is little to be gained by sending them to another climate without treatment. From a purely theoretical stand-point one cannot but admit that the method provides for an increased fulness and duration of expansion, but it needs to be proved that any difference of pressure is set up at different parts of the lung by the act of straining. Weaver has, however, a variation of the same method, in which external pressure is made upon the lower part of the chest, with the effect doubtless of slightly distending other parts.

And a similar result would presumably follow if, during held inspiration, instead of "bearing down," the subject were to "draw in" the lower abdominal wall, as in the ordinary act of emptying the chest to the utmost.

CARBONIC ACID GAS has been used by A. Rose,¹ of New York, who contributes an instructive article upon its therapeutic uses. Attention is directed to the part played by carbonic acid in the physiology and chemistry of respiration. He refers to the inflation of the large intestines with carbonic acid gas for diagnostic purposes, first practised by Von Ziemssen. Rosenbach has also furnished us with a good account of its behavior in the intestinal tract.

The introduction of carbonic acid into the circulation by way of the rectum is a recent idea. Bergeon, in 1886, utilized in that direction Claude Bernard's discovery that volatilized carbonic acid introduced into the rectum will pass through the venous blood current into the lungs, there to be eliminated without entering the arterial system, and he sought by means of enemata of H_2S diluted with CO_2 to destroy the tubercle bacilli within the lung. Although hardly noticed in Germany, his method was extensively tried elsewhere. Ephraim administered CO_2 per rectum to a number of out-patients for chlorosis, phthisis, and asthma, as a rule, only once a day, sometimes twice. His experience would show that carbonic acid gas treatment is an excellent auxiliary in the treatment of chlorosis. Ten patients were treated for bronchial asthma. In some cases the nightly attacks were prevented by afternoon treatment.

Its value in whooping-cough has been dealt with by Rose.² Since then O'Dwyer gave it a trial in the New York Foundling Asylum. The treatment has been the most satisfactory ever used in the institution.

¹ Medical News, October 29 and November 5, 1898.

² New York Medical Journal, March 9, November 30, and December 28, 1895.

Sanatoria. The advantage of isolating the consumptive poor in sanatoria, in the interests of the patients and of the community, is sufficiently obvious. Numerous schemes and actual beginnings are reported.

A valuable paper by Trudeau¹ describes the working of the climatic treatment of early phthisis in the Adirondack Cottage Sanatorium, and reports the results of laboratory work. Of 203 patients who remained an average of nine months, 70 were apparently cured; in 61 the disease was arrested, 40 improved, 26 were unimproved, and 6 died. The tuberculin treatment has been found inadmissible in the active types. The original tuberculin was used only during the first year after its introduction. During the past year Hahn's tuberculo-plasmin was used in a small number of cases. In the apyretic types of the disease small increasing doses, such as never to produce any marked rise, can be given without danger and with encouraging results for a period of six to eight months—the dose being increased from 1 milligramme of Koch's tuberculin to as much as 100 milligrammes without causing any marked reaction.

Adami² pays well-deserved tribute to the life-saving work carried out by Trudeau, to his systematic methods and successful hygiene, and lastly to the value of his researches in the laboratory, both in the direction of immunity and of cure; and is able to say that this remote health station has been, in respect to the treatment of phthisis, ahead of anything in England.

THE HIGH ALTITUDE AND THE LOW ALTITUDE SANATORIA COMPARED. The faults of the altitude treatment and of Davos, and the claims of other stations, and in particular of the German sanatoria, have found eloquent exponents.

A comparison of the results of the Alpine and non-Alpine sanatoria of Germany is made by F. R. Walters,³ who holds that very good results are obtained in the latter. For instance, in 1541 phthisical patients treated in non-Alpine sanatoria generally, improvement had taken place in 85.5 per cent., local improvement in 61.1 per cent., and complete restoration of working capacity in 7.8 per cent. Walters⁴ reminds us that there are in Germany forty-three sanatoria in working order, and that German Sickness Insurance Companies have this year set aside between three and four million marks for similar purposes. In America there were, when he wrote, nineteen sanatoria in existence, and one being built. He urges that similar results might be secured in England by establishing suitable sanatoria.

Burton-Fanning⁵ gives an interesting account, with illustrations, of

¹ The Practitioner, February, 1899.

² Lancet, January 14, 1899.

³ Year book of Treatment for 1899.

⁴ Ibid.

⁵ British Medical Journal, October 15, 1898.

the open-air treatment as it is carried out in the German sanatoria of Falkenstein, of Goerbersdorf, of Hohen-Honnef, and of Nordrach, and at Dr. Turban's sanatorium in Davos.

Mander Smyth¹ describes the *Nordrach system* in contrast with that prevalent at Davos, and notices the question of climate, the peculiarities of the treatment at Nordrach, including diet and discipline, the pathology of "chills" and common colds, the treatment of pyrexia, the value of regulated exercise, the environment desirable for a sanatorium, and the advantages of small sanatoria.

The other side of the question is presented to us in Dr. Turban's new book,² which comes at the right time, when sanatoria for consumptive patients are much discussed.

During the seven years since the opening of Dr. Turban's sanatorium, 66.1 per cent. of all the patients were discharged in a normal state of health, and from one to seven years after their discharge 48 per cent. still maintained their health. Of patients in the third stage, with extensive and serious disease in the lungs and other complications, 17.4 per cent. were permanently cured; while of those in the first stage, with only slight tuberculosis in one lung, 97.5 per cent., or almost all, were permanently cured.

Turning to the results obtained at Falkenstein, the best known of the German lowland sanatoria (the most recent statistics published are those dated 1885 and 1886), we find the number of absolute and relative cures given as 24.2 per cent., or (according to Meissen's statistics) the "permanent cures" were only 22.7 per cent. of the whole number of cases treated, or *less than one-half* the number obtained by Dr. Turban.

To take another point of comparison: Of all the patients who entered the sanatorium of Hohen-Honnef, in the mild climate of the lower Rhine district, during the period 1894 to 1896, suffering from fever, 37.2 per cent. left free from that symptom, the percentage in Dr. Turban's sanatorium being 64.9 per cent., or almost twice as many.

The *Davos Courier* (April 6, 1899) points out that these results are obtained not only in institutions like that of Dr. Turban, where the patients enjoy constant medical supervision, but also under ordinary conditions, as shown by the statistics published by Dr. Lucius Spengler for the years 1887 to 1890 (the influenza period), when 41.8 per cent. of the patients treated by him were absolutely and relatively cured—*i. e.*, nearly twice as many as at Falkenstein.

General Measures of Prevention. John H. Pryor's³ paper on the "Relation of the State to the Consumptive," specially refers to the pre-

¹ British Medical Journal, October 1, 1898.

² Beiträge zur Kenntniss der Lungentuberkulose. Wiesbaden, 1899.

³ Medical News, February 18, 1899.

vention of the disease and to the State care of the incipient consumptive. Pressure needs to be put upon the State and upon the State of New York in dealing with the "white plague." The proper care of the incipient consumptive is the most vital philanthropic and economic problem of our time, and efficient prevention must precede or accompany early relief.

It had been recommended at the previous congress on tuberculosis that, as a preventive against the dissemination of tubercle by the sputa, spittoons should be provided in all public places, and particularly in schools, with conspicuous notices forbidding expectoration at any other place. This would help to reform our habits in this respect. In connection with Nocard's remarks on prevention, in his presidential address, L. H. Petit, General Secretary of the Paris Congress, was able to report that the recommendation relating to spittoons had been acted upon, although without any official pressure, in many schools in France, but that relating to notification had been regarded as still inopportune. Disinfection at places where tubercle had been active had not yet been made compulsory, but it was more widely practised. Steps had been taken at various hospitals for disinfection and for the isolation of consumptives in separate wards, and six million francs had been voted for the addition of new buildings to some of them and for the construction of a new hospital on the right bank of the Seine. It had been better had sanatoria been established in the country; this want is likely to be supplied in the near future.

DISEASES OF THE MEDIASTINUM.

Sarcoma. C. D. Green¹ records an extremely rapid case of round-celled sarcoma replacing the left lung, surrounding the aorta and great veins, and eroding the spinal column. The thymus sometimes originates mediastinal sarcoma, but in this case Green thinks the disease had begun in the glands of the hilus. There were secondary growths in the right lung, liver, and pancreas.

The Recent Surgery of the Posterior Mediastinum and of its Contents. It is vital that the physician should be *au fait* with the most recent surgical possibilities. This is the more essential in the case of structures remote from investigation, such as those of the posterior mediastinum, the affections of which too often baffle diagnosis till they have advanced to a hopeless stage. A knowledge of what might be attempted if the lesions could be recognized sufficiently early is the strongest stimulus to a searching diagnosis. This is an excuse for incidental references

¹ British Medical Journal, December 24, 1898.

to the surgery of the posterior mediastinum, of the œsophagus, and of the thoracic duct.

The *British Medical Journal's* article,¹ which reviews thoracic surgery (Sédillot, Moutard-Martin, Estlander, Letiévaut, Schede) and pulmonary surgery (Glück, Biondi, Omboni, Tuffier, Lowson, and Doyen), refers to the new surgical lines of approach to the posterior mediastinum and œsophagus, and to the work of Nasiloff, Quénu, Hartmann, Potarca, Ziembicki, Bryant, and Obalinski. Rehn's recent operation for stricture and for cancer of the œsophagus, though not as successful as those undertaken by Obalinski for suppuration of the mediastinum, show that the œsophagus can be reached surgically through an incision to the left of the vertebral column, and must encourage œsophagoscopic work, such as that which has been carried on by Mikulicz, Rosenheim, and von Hacker.

DISEASES OF THE ŒSOPHAGUS, THEIR DIAGNOSIS AND TREATMENT.

Œsophagoscopy as an aid to diagnosis has been revived during the last few years. Kirstein² gives his own experience. There are two methods, the "median" and the "lateral," accordingly as the tongue is pushed forward or to the side. The œsophagoscope can be employed whenever a portion of the cords are visible by autoscropy, and its introduction is fairly easy, even without cocaine, in about a fourth of the subjects. In others the force needed may be such as to discourage the attempt.

Idiopathic Hypertrophy of the Œsophagus. A specimen from a man, aged fifty-nine years, who was treated by me for other symptoms and died without any dysphagia ever having been observed or subsequently traced in the past history, was exhibited by H. D. Rolleston.³ The *circular* muscular coat began to hypertrophy three inches below the cricoid cartilage. The *longitudinal* coat was practically normal. The numerous adhesions which occurred laterally were not of a density or firmness sufficient to account for the hypertrophy. There was no dilatation, narrowing, or obstruction. This condition appeared, therefore, to be analogous with the congenital hypertrophy of the pylorus, which has recently been described in infants.

Deep Œsophageal Diverticula and Their Treatment. Circumscribed dilatations are commonly due to traction or pressure from within. They are situated opposite the bifurcation of the trachea or at the junc-

¹ Editorial, January 7, 1899.

² Berliner klin. Wochenschrift, July 4, 1898.

³ Lancet, November 5, 1898.

tion of the pharynx and œsophagus. Diffuse dilatations are generally due to an anatomical narrowing. Reitzenstein¹ was able to diagnose in a woman, aged fifty years, a large, sacculated diverticulum situated at the lower part of the œsophagus: (1) By a chemical examination of the fluid pumped up; (2) by the simultaneous introduction of two tubes, one into the stomach, the other into the œsophagus; (3) by the use of Einhorn's electrical apparatus; (4) and by means of a radiogram (obtained after filling the dilatation with a solution of bismuth), which showed its great size and its bulging to the right. No organic narrowing having been found, the sacculatation was regarded as a primary diverticulum complicating a diffuse dilatation of the œsophagus. The treatment consisted in washing out the œsophagus in the horizontal position daily and in the administration of food in the supine posture. The patient improved, and gained twelve pounds in five weeks.

Dilatation of the Œsophagus, Undiagnosed and Unexplained. Lazarus-Barlow's² case was clinically remarkable in that the vomiting due to the dilatation of the œsophagus was not traced to its cause; the dilatation was not diagnosed, and laparotomy was performed ineffectually. The patient was intensely emaciated. The greatest diameter of the dilatation was three and a half inches; there was hypertrophy of the circular fibres of the muscular coat, indicating obstruction of the cardia. As shown by Langley, dilatation of the œsophagus is effected by contraction of the longitudinal fibres under stimulation from the vagi, though in this case the vagus showed no change.

Wardrop Griffith's case, showing even greater dilatation, was brought forward by H. D. Rolleston, who regarded these cases as due to the atony of the longitudinal fibres, which might produce a difficulty in the opening of the cardiac orifice. Griffith took into account also the negative pressure of the thorax, which in atony would be unopposed.

Retrograde Dilatation of a Stricture by Bougies from the Stomach. Barling³ carried out an ingenious and successful treatment for stricture in a little girl, aged two years. The stricture was reached through an incision an inch long in the anterior wall of the stomach, through which a succession of bougies were introduced until No. 16 could be passed. A stout silk string attached to one of the bougies was drawn out at the mouth, and was used in a saw-like manner, to divide the stricture tissue. The patient made a good recovery.

Functional Dysphagia. The causes of dysphagia occur in the following order of frequency: cancer, aneurism, ulcerations (traumatic, syphilitic, and tuberculous), and, lastly, functional disease. St. Clair

¹ Münch. med. Wochenschrift, March 22, 1898.

² British Medical Journal, February 11, 1899.

³ Ibid., December 24, 1898.

Thomson¹ reminds us that functional dysphagia may be associated with a great variety of pathological changes: pharyngeal, laryngeal, and œsophageal. Inspection of the larynx, auscultation, and probing of the œsophagus are therefore indicated, and the latter procedure in many functional cases, particularly in the hysterical group, may prove curative in itself. The persistence of the symptom and its tendency to recurrence, and the anæmia of the patients, are characteristic. A special indication is to search for any points of reflex irritation—ovarian, uterine, and others.

Spasmodic Stricture is regarded by I. Anderson² as frequently the result of malarial influence. The symptoms he had observed were relieved by full doses of tincture of belladonna and liquor arsenicatis.

Hysterical Spasm of the Œsophagus in a Child. The spasm had been set up suddenly in Cattaneo's³ case by the swallowing of a glass marble. The girl, aged twelve years, continued to suffer for five years, swallowing some solids without difficulty, liquids not so easily, particularly if cold. Frequent vomiting also occurred. Hysterical symptoms being present, such as restricted visual field, absence of conjunctival reflex, etc., a sound was passed, but no stricture was found. The threat of its daily use brought about rapid recovery.

DISEASES OF THE THORACIC DUCT.

Obstruction of the Thoracic Duct. It is, perhaps, due to the abundance and intricacy of the collateral circulation that stoppage of the lymph-stream is not more commonly produced by the lateral pressure of growths, tumors, and aneurisms than is actually found to be the case. I agree with Rolleston's⁴ suggestion, in his important article on "Diseases of the Lymphatics," that the state of the veins plays an important part in the result; so long as patent they may afford relief, but their concomitant obstruction would aggravate lymphatic dilatation and œdema. Effective obstruction results more frequently from pressure exerted close to the termination of the duct. Collateral circulation is here reduced to the assistance of relatively large channels, which may themselves be implicated in the same obstruction. Again, there is a relatively greater exposure of this part of the thoracic duct to pressure and lesions, and a great liability of this region to new growths and to glandular enlargements. Perhaps also any pressure would take greater effect because of the narrowness and rigidity of the upper outlet of the thorax. This tells especially upon the lymphatics, which reach the

¹ *Lancet*, December 3, 1898.

² *British Medical Journal*, June 25, 1898.

³ *Gazz. degli Osped.*, September 4, 1898.

⁴ Clifford Allbutt's *System of Medicine*, vol. vi.

thoracic or the right lymphatic duct from the peritoneum along the anterior mediastinum.

The causes of obstruction of the thoracic duct put forward by Rolleston may be grouped as follows :

1. *Lateral pressure* from without may be due to : (a) *Neoplasms*. These include all the mediastinal growths, particularly those in the anterior mediastinum, and various glandular enlargements from neoplastic deposits, tuberculous, lymphadenomatous, or malignant. (b) *Fibrosis*, the result of inflammatory processes or of traumatic lesions. (c) *Enlargement or hypertrophy* of the thymus or other organs, etc. (d) *Goitre* of the exophthalmic variety, in a unique case reported by Sir Samuel Wilks, seems to have extended into the thorax and to have compressed the thoracic duct so as to produce much emaciation.

2. *Mural changes* are chiefly of two kinds : inflammatory thickenings, which may be continuous with and aggravated by adhesions, and infiltrations with new growths, malignant or tuberculous. In some cases of carcinoma the thoracic duct may be traced along a great part of its course as a thickened cord.

3. The causes of *intramural obstructions* are relatively few. One of the most common, filariasis, generally takes effect in the abdominal lymphatics. Embolism due to detachment of particles of new growth higher up in the lymphatic stream is another cause under this heading.

Thrombosis may occur in the thoracic duct itself ; sometimes this may be due to traumatic lesion, or, as in the case of Ormerod and Sidney Martin, it may plug the innominate vein so as to completely block the normal outflow.

Tricuspid reflux of severe degree might, *à priori*, be regarded as a probable and frequent cause, and lymph stagnation has been in a few cases attributed to it, though this cause may not have been the only one at work.

THE RESULTS OF OBSTRUCTION, when imperfectly relieved by collateral circulation, are serious in the case of stoppage of one of the main channels. Increased pressure is thrown upon the lymph radicles, and transudation takes place into the cavities. Thus chylous ascites and chylous hydrothorax or hydropericardium may be set up. The lymphatics themselves undergo dilatation, and varicosities and elephantiasis may overtake the limbs or the part affected.

True chylous effusions (to be carefully distinguished from the fatty and the chyloform varieties, ascites, which have been described by Quinke and others, one variety being milky, non-chylous, and non-fatty, while the other is milky, non-chylous, but fatty) are produced by obstructions of the thoracic duct or of its larger branches, and the mechanism is one either of exhalation from the stomata or sometimes of rupture of some

of the varicose vessels. Effusion may also be due to traumatic local lesions; but it is then probably limited to one serous cavity, whereas an obstruction situated high up will sometimes produce concurrent chylous ascites and intrathoracic chylous effusions, a combination which has come under my own observation.

Chylous ascites has sometimes been traced back to heart disease, giving rise to an obstructed venous circulation and to thrombosis of the jugular vein, or even to thrombosis in the thoracic duct.

Rupture of the Thoracic Duct. This may be traumatic, as obtained in a case reported by Quinke, in which chylous effusions occurred in the pleura and peritoneum of a man run over by a cart. Stabs are more commonly the form of injury sustained by the duct, or rupture may be due to various pathological causes. Straining from whooping-cough (Wilhelm), or from vomiting (Busey), and muscular effort are also given as causes.

TRAUMATIC CHYLOTHORAX.¹ Attention is drawn to the fact that in 265 years only fourteen cases have been recorded of rupture of the thoracic duct from injury with effusion of chyle into the pleura and peritoneum. To these are now added two cases in which puncture of the seventh and eighth intercostal spaces led to the escape of an orange-tinted, milky fluid, later on becoming milk-white, which was evidently chyle extravasated from the duct. Both cases recovered.

DISEASES OF THE THYMUS GLAND.

Affections of the thymus gland are not restricted to infancy and childhood. At a later period it may become the starting-point of new growth or of abscess. A brief review of the whole subject is contributed by Frederick T. Roberts.²

DISEASES OF THE HEART.

The Physical Examination of the Heart. In children, Baginski³ reminds us, the area of dulness is different from that of adults, the higher level of the diaphragm in a child giving to the heart not only a higher but a more horizontal position. For this reason alterations in the dull area do not of themselves differentiate between effusion and dilatation. Of greater diagnostic importance are the pericardial murmurs, especially those heard at the upper part.

¹ Münch. med. Wochenschrift, February 7; Journal American Medical Association, March 18.

² Clifford Allbutt's System of Medicine, vol. vi.

³ Berlin Med. Ges., October 26; Medical News, December 10, 1898.

RADIOSCOPY is now available as an additional means of physical examination. Francis H. Williams,¹ of Boston, mentions, in connection with the movements of the heart, that the most conspicuous motion is seen to take place on the left side. The right border of the heart, difficult to determine by auscultation and percussion, is seen on the fluoroscope to lie about one and three-quarter inches to the right of the median line. Thus the all-important question of the size of the heart can be determined and aneurism can be diagnosed.

Aug. Hoffmann² has been able to observe on the fluorescent screen the irregularities of cardiac action in arrhythmia. The movements are specially perceptible at the lower third of the left border of the heart.

THE MIGRATIONS OF THE HEART FROM ITS NORMAL POSITION. These are, in the case of pleural effusions, purely temporary so long as the heart is mobile. In destructive disease of the lung the displacement is usually permanent, yet the heart may sometimes remain free from adhesions and rigid fixation. In these cases, when at the autopsy air is admitted into the chest, the heart, no longer influenced by atmospheric pressure, would be capable of immediately resuming its normal position—indeed, so quickly that the operator may never suspect that it had been displaced.

This is the explanation which I have ventured to suggest for the puzzling cases reported under the heading of "Phthisis, with Peculiar Cardiac Physical Signs," by Hale White,³ and by Southwick Willmore,⁴ in which during life the heart was felt or seen beating far in the right chest, and yet at the autopsy it was found to occupy its normal position. In one of the two cases of right-sided displacement of the heart reported by me, exactly the same occurrence took place, but I did not consider that the post-mortem evidence invalidated the results arrived at by the clinical examination. In order to uphold the trustworthiness of our diagnostic methods, cardiac displacements should be verified during life by skiagraphy; and in this class of cases the pathologist should adopt a method of section (as, for instance, by opening the pericardium from the abdominal cavity before opening the chest) capable of demonstrating the true condition.

THE SEAT OF THE APEX BEAT IN TUBERCULOSIS. Morano's⁵ investigation of 150 subjects, some healthy and active, others healthy but confined to bed, and others suffering from pulmonary tuberculosis, had for its object the testing of Cardile's statement, that in early tuberculous affections of the lung the apex is displaced inward. In the two sets of

¹ Boston Medical and Surgical Journal, November 24.

² Deutsche med. Wochenschrift, April 13, 1899.

³ Lancet, November 19, 1898.

⁴ Ibid., December 10, 1898.

⁵ Rif. Med., September 3, 1898.

healthy subjects the apex beat was found in the fourth interspace in 67 per cent., and in the fifth in 33 per cent. In the tuberculous cases it was found six times in the fourth space and seven times in the fifth. His conclusions do not support those of Cardile.

Tumors of the Heart. PRIMARY TUMOR OF THE RIGHT ATRIUM, WITH RUPTURE OF THE INFERIOR VENA CAVA. Nathan Raw's¹ case occurred in a female, aged forty-three years. According to Berthelsen, in 30 published cases of primary tumors of the heart the structure was as follows: Sarcoma, 9 (pure sarcoma, 5; fibrosarcoma, 3; myxosarcoma, 1); myxoma, 7 (pure myxoma, 4; fibromyxoma, 3); fibroma, 6; syphilitic tumors, 2; cancer, 3; lipoma, 2; cyst, 1. Pawlowski only succeeded in collecting three cases of fibroma of the heart.

TUMORS OF THE VALVES, other than aneurismal, are pathological curiosities. The occurrence of a papillary myxoma of the tricuspid valve is described by Guth² in a case of medullary cancer of the stomach, with perforation and septic pleurisy. The tumor affected the posterior valve-flap.

In Raymond Crawford's³ case a tumor of the pulmonary valves was found in the heart of a laborer, aged seventy-two years. On examination it proved to be a spindle-celled sarcoma.

Extensive metastatic deposits of carcinoma in the heart, one of them at the base of the right *papillary muscle* in the right ventricle, are described by Arthur Voelcker⁴ in the case of a woman, aged sixty-one years, who died from primary carcinoma of the pylorus.

ANEURISM OF THE LEFT VENTRICLE. Ernest B. Sangree⁵ gives the morbid appearances found after death in a woman, aged twenty-five years. An aneurism of the left ventricle communicated with the ventricular cavity just below the attachment of the anterior mitral flap. The ventricle was both hypertrophied and dilated. Not improbably some embolism or thrombosis of the coronary artery may have led to local softening of the myocardium and to its gradual distention till nothing was left but the epicardium as a covering for the aneurismal sac.

The Cardiac Murmurs and Sounds. THE EXPERIMENTAL PRODUCTION OF CARDIAC MURMURS. Van Dorsten's experiments on dogs have led to important conclusions, of which Talma⁶ gives an account: (1) Inorganic murmurs are rarely due to oligæmia; (2) hydremia, especially hydræmic plethora, brings them about; (3) quinine dilates the cavities of the heart, giving rise to cardiac and arterial murmurs closely resembling those of chlorosis (in this quinine dilatation there

¹ British Medical Journal, October 29, 1898.

² Prag. med. Wochenschrift, 1898.

³ Pathological Society Transactions, vol. xlix.

⁴ Ibid.

⁵ Journal American Medical Association, June 11.

⁶ Berliner klin. Wochenschrift, November 21, 1898.

was no tricuspid regurgitation); (4) the occurrence of murmurs is favored by cardiac infrequency and over-filling; (5) murmurs are apt to be induced or increased by a strengthening of the systole. The methods employed consisted in accurately determining the dulness of the heart, localizing by long pins the loudest seats of murmurs, laying bare the left carotid and right jugular vein, and introducing a glass tube into the crural artery and into the femoral vein; through the latter warm saline solution was injected to produce hydræmia or hydræmic plethora, while oligæmia was produced by bleeding. When oligæmia was produced first and hydræmia subsequently no murmur was obtained until the hydræmia had developed.

THE MITRAL SYSTOLIC MURMUR. Of all cardiac murmurs this is the most common, and that which presents, in respect of its significance and gravity, the greatest variety. The loudest murmur is sometimes that which is produced at a narrow and relatively unimportant leakage by a powerful ventricle, and, conversely, a considerable valvular defect, allowing that a large regurgitation may give rise only to a soft and slight murmur; nay, if the ventricle should be much weakened by dilatation, the murmur may be scarcely audible and sometimes not heard. But in addition to these varieties in the mode of causation of the organic valvular murmur, the large group of the temporary and functional murmurs corresponds to a variety of causes, and these have to be diagnosed, if possible, though this cannot always be accomplished.

In dealing with the causes of the inconstancy of regurgitant mitral murmurs, J. N. Hall, of Denver, dwells upon the varieties, truly valvular, orificial, hæmic and others, which the murmur may present. He also refers to the varying relation of the heart to the chest-wall, whereby conduction may be influenced. He cannot agree with Cammann's statement, that the existence of mitral leakage can only be established by hearing the systolic murmur transmitted to the back. The papillary muscles, which Roy and Adami¹ regard as especially susceptible to the action of *strophanthus*, may also influence the disappearance of murmurs by contracting with an increased force.

MUSICAL MITRAL MURMURS. Henry F. Lewis² mentions that the musical character belongs rather to the aortic murmurs. In one of his cases a musical murmur was heard with the diastole along the right carotid as far as the angle of the jaw. Yet sometimes it is heard in connection with mitral disease.

Musical murmurs in general are due to the rapid oscillations of long appendages vibrating freely in the blood-stream. An aortic flap partly

¹ Journal American Medical Association, July 23.

² Chicago Soc. for Int. Med., November 22; Medical News, December 17.

torn from its attachment or a long pedunculated aortic vegetation are the most common causes. Similar conditions may also be found at the mitral orifice, where the peculiarity in generation is of diagnostic value, or suggesting that a chorda tendinea has been ruptured or that vegetations are present.

Murmurs audible at a distance from the chest are usually aortic and most commonly regurgitant.

In F. Parkes Weber's¹ case of extreme calcification of the mitral and aortic orifices the systolic murmur produced at the stenosed aortic orifice, which barely admitted the little finger, was audible at a slight distance from the chest-wall at the level of the base of the heart, and it could be heard with the stethoscope loudly all over the chest.

THE CRESCENDO MURMUR OF MITRAL STENOSIS. The mitral stenotic murmurs are our standing riddle, and its wit-sharpening difficulties are not likely to fail us so long as the solution is attempted on the lines which have hitherto been followed. E. M. Brockbank² wisely concentrates his attention upon one point, that of the "crescendo murmur," which immediately precedes the first sound. He adheres to the "heterodox" theory, which he had supported in June, 1897, that "the true crescendo murmur is of *early systolic rhythm*, and is formed by blood regurgitating through the stiff jaws of the stenosed valve, while they are abnormally slowly closing under the rising force of intraventricular pressure generated by the earliest phase of the ventricular contraction." The comparative feebleness of the left auricular wall implies that so loud a murmur cannot be due to auricular contraction, and must be due to the powerful contraction of the left ventricle—a conclusion further borne out by his observation that the murmur may degenerate into a long, systolic murmur of regurgitation when the heart is acting feebly, and may be brought back again when the intra-aortic pressure and the force of the left ventricular systole have been raised by the patient sitting up. He seeks to explain the apparently presystolic rhythm of the murmur by assuming (but this needs to be proved) that the ventricular contraction begins at the apex, but fails in this disease to effect complete mitral closure until the ventricular peristalsis has reached the basic level. There is ample time, he thinks, in the normal duration of the ventricular systole (0.8 second for a pulse-rate of 75) for the average duration (0.1 second) of the crescendo murmur, and he does not admit that there is in stenosis any alteration in the length of the ventricular systole, whereas the presystolic theory assumes a lengthening of the diastole. The transient regurgitation murmur of Balfour he regards as an imperfectly developed crescendo murmur in connection with mobile

¹ Transactions Pathological Society of London, vol. xlix.

² Edinburgh Medical Journal, March and April, 1899.

valve curtains, the genuine crescendo murmur being brought about by their eventual loss of pliability.

TRANSIENT MITRAL MURMURS. We are still in need of some reliable means of distinguishing the purely "orificial" murmur of rheumatic myocarditis from that, unfortunately permanent, of rheumatic valvulitis or structural disease of the membrane. The earliest alteration of the first sound in any rheumatic case always leaves room for a hope that the murmur may disappear, and not infrequently this hope is justified by the event. Starck's¹ case appears to have been of this kind, and was probably orificial, although the heart was not found at any time to be enlarged. He refers to a case of Bauer's, in which the aortic valve was the seat of temporary incompetence in acute endocarditis; it is readily conceivable that in both valves a murmur may be set up by a vegetation which may ultimately disappear.

THE DIASTOLIC PULMONARY MURMUR. In connection with two cases of pulmonary regurgitation, with diastolic pulmonary murmur, Francis Boyd² expresses his opinion that this murmur is produced (apart from congenital cases) by pulmonary valvulitis, or by an increase of pressure within the pulmonary circuit sufficient to dilate the pulmonary artery. He refers to the bibliography of the subject by Barié in 1891 and Gerhardt in 1892, and to the theories of Gerhardt, Friedrich, and Graham Steell.

THE CARDIOPULMONARY MURMURS. Squire³ discusses these murmurs in connection with twenty-four clinical cases. The systolic "whiffing" sound, which he has often observed below the angle of the left scapula, is of common occurrence and often overlooked. This kind of murmur being audible often at a distance from the heart, suggests that the conducting tissues are consolidated, and this was the case in several of the instances observed at the Consumption Hospital. Squire, however, believes that the bruit is frequently produced without any disease of lung or heart. The murmur was heard during inspiration only in 10 cases, during expiration only in 4, and during both phases in 7 cases. Sir. B. W. Richardson⁴ was, perhaps, the earliest writer on this subject. Woillez,⁵ who refers to his article, has further described these murmurs.

Reduplication of the Heart-sounds. "The Clinical Relations of the Papillary Muscles" is the title of an interesting paper by Henry Sewall, of Denver.⁶ He has no hesitation in ascribing the reduplica-

¹ *Jahrb. f. Kinderheilk. u. Phys. Erziehung*, vol. xlvii, pp. 2 and 3.

² *Edinburgh Med.-Chir. Soc.*, December 7, 1893; *British Medical Journal*, December 17, 1898.

³ *British Medical Journal*, December 10, 1898.

⁴ *Medical Times and Gazette*, 1860, vol. i. p. 187.

⁵ *L'Union Med.*, t. v. and vi. p. 515.

⁶ *Boston Medical and Surgical Journal*, July 28, 1898.

tion of the second sound to want of synchronism between the two valves. His explanation of the apparent reduplication of the first sound is somewhat novel. An overstretched auricle would, he thinks, react by its own elasticity and send a strong stream into the ventricle, raising the auriculo-ventricular valves and stretching the papillary muscles. These would reply to the stimulus by contraction, causing the sound in question. In overstrain and fatigue of the papillary muscles the accessory sound might be moved to a later period of the diastolic pause, so as to then approach the next first sound.

This explanation is suggestive and captivating by its simplicity; but there is some difficulty in assuming that the papillary muscles possess the power of contracting quite independently of the rest of the myocardium, as this view would imply. Equally difficult is it to suppose that, having contracted early, they would remain contracted through the entire pause to the end of the systole, or that they would undergo a second contraction at the proper time, or, lastly, that they would not contract again, and that the systole would be accomplished without their participation.

In connection with the first sound we have to deal with real or with simulated reduplications. In real reduplication, which is due to systolic asynchronism, that ventricle contracts first within which the diastolic blood-pressure is relatively increased.

Sewell reminds us of the fundamental facts that the tendency to reduplication of the first sound is most marked at the end of expiration, and that a tendency to a splitting of the second sound occurs about the end of inspiration, at which time the phenomenon is almost a normal one, since the tension of the aortic valve precedes, at the end of inspiration and beginning of expiration, that of the pulmonary valve. True reduplication of the second sound is heard most plainly at the base of the heart, in the second and third left spaces close to the sternum.

Venous Murmurs in Unusual Situations. Vascular murmurs analogous to the venous hum in the neck are occasionally heard in various situations. H. Mackenzie¹ exhibited before the Medical Society of London a case of this kind, in which the murmur, audible at the base of the right lung, was loud and blowing, and occupied nearly the whole period of the cardiac cycle. It resembled the murmur audible over an arterio-venous aneurism, increasing in intensity with inspiration, but not altered by holding the breath. Caley's suggestion, that it might be due to relative stenosis of the inferior vena cava at the level of the diaphragm should be borne in mind, together with Rolleston's ingenious notion that an angioma of the liver might be the cause of its production. Similar

¹ British Medical Journal, November 19, 1898.

murmurs have been heard in other situations, and by myself in one case at the infrasternal angle.

DISEASES OF THE AORTA AND GREAT VESSELS.

Malformations and Congenital Abnormalities of the Aorta. The most important clinically are stenosis or obliteration of the thoracic aorta and persistence of the ductus arteriosus.

OBLITERATION OF THE AORTA may sometimes be diagnosed. This occurred in a striking case narrated by Brunner. One hundred and five cases of partial or complete obliteration have hitherto been reported, the stenosis being always situated above or below the duct, which is generally itself obliterated. In this case, that of a man aged thirty years, who died of phthisis, there were no special symptoms, but the collateral circulation was served by superficial, somewhat tortuous vessels arising from the subclavians. The presence of these vessels and the absence of pulsation from the femorals led to a diagnosis being made during life.

STENOSIS AND OBLITERATION OF THE AORTA AT OR NEAR THE DUCTUS BOTALLI has also been studied by Wadstein, who has made an analysis of 113 cases (chiefly from literature), in which the aortic anomaly was probably due to the influence of the ductus arteriosus and to failure of its normal involution. The ages varied even up to ninety-two years. It is noteworthy that in 15 cases death occurred suddenly, and in 13 of these it was due to rupture of the aorta, preceded in 8 instances by aneurismal dilatation. This abnormality is exceedingly rare, and loses thereby for us some of its interest.

ABNORMAL PATENCY OF THE DUCTUS ARTERIOSUS. Much greater practical and clinical interest attaches to this condition, which is not an uncommon concomitant of congenital heart disease. The physical signs to which it gives rise are apt to puzzle observers unless they should happen to bear in mind the possible presence of this malformation. The diagnosis, which is usually arrived at by percussion and auscultation, was successfully made by Zinn¹ by radioscopy. He was able to demonstrate by X-rays the persistence of the ductus arteriosus in a woman, aged thirty-seven years, with clubbing of fingers and dyspnoea on exertion. An area of dulness extended from the first to the third left intercostal spaces, and a thrill was felt strongest in the first *left* space. A loud systolic murmur, most intense in the first left space, was also audible in the large vessels. On the screen a dark area cor-

¹ Deutsche med. Wochenschrift, 1898, No. 11; American Journal of the Medical Sciences, July, 1898.

responded to the dulness, and was partly due to the dilatation of the pulmonary artery, which Gerhardt has described in connection with patent ductus.

An Anomalous Truncus Brachiocephalicus. A case associated with aortic incompetence and with symptoms simulating aneurism is described by Ludwig Freyberger,¹ in a maid-servant, aged twenty-six years, who died under the care of Dr. Clifford Beale. The patient had noticed, a few weeks before admission, a lump beating in the neck, and this had increased until she was orthopneic. Examination showed a systolic murmur at the apex, not audible above the third rib, and a systolic and diastolic bruit at the second right cartilage. A pulsating swelling was visible above the right sterno-clavicular joint. There was no thrill, but a to-and-fro bruit could be heard over it. The clinical diagnosis was heart disease, double aortic murmur, and aneurismal dilatation of the innominate artery. At the post-mortem examination this swelling was found to extend across from one sterno-mastoid muscle to the other; its upper border was one-half inch above the notch, but its lower border could not be felt. It proved to be a wide truncus brachiocephalicus, from which arose the arteria thyroidea, in addition to the right and the left common carotid artery. The heart was hypertrophied, especially the left ventricle, the aortic valves atheromatous and incompetent, and the aorta itself slightly atheromatous.

Freyberger remarks that this distribution is the normal condition in most apes, and is of comparatively frequent occurrence. I have recently, through the kindness of a colleague, seen a case, with analogous physical signs, in which I was able to diagnose this abnormal distribution.

Rupture of the Aorta. A probably unique case of complete rupture three-quarters of an inch above the valves, which did not prove immediately fatal, is described by Petch and Ashwin.² The pericardial covering of the vessel was distended with blood as far as the seat of reflection of the membrane, and into this sac the distal portion of the aorta was invaginated. Owing to this extraordinary combination the circulation was carried on and the man survived for five hours from the moment when he fell unconscious. He never recovered consciousness. The case during life was diagnosed as one of cerebral hemorrhage.

Three cases of spontaneous rupture of the aorta were brought before the New York Pathological Society (February 8, 1899) by Leon T. Le Wald. In one of them (from a woman, aged seventy years) the rupture was transverse and complete, and occurred one inch above the valves.

Dilatation of the Aorta. The occurrence of aortic valvular incompetence due to dilatation of the aorta and of its orifice, without any dis-

¹ Transactions Pathological Society of London, vol. xlix

² Lancet, July 9, 1898.

case of the valve-flaps, has been verified post-mortem by Newton Pitt,¹ who describes several instances of this condition.

Aneurisms of the Aorta. INTRAPERICARDIAL ANEURISMS. This variety of aneurism is perhaps the most difficult to diagnose—at any rate to diagnose early—the relatively small tumor being buried between the auricles, and forming at first, as it were, part of the heart itself. At this stage it scarcely influences the præcordial dulness. At a later period the extension of the dulness is naturally mistaken for the result of hypertrophy or dilatation or of pericardial effusion. Diagnosis, therefore, is largely based upon collateral evidence, and by a shrewd sense of the probabilities based upon anatomical as well as clinical experience.

ANEURISMS OF THE ASCENDING AORTA. An aneurism developing beyond the pericardium in the course of the ascending aorta is ultimately diagnosed when it has acquired a certain size, especially when, as often happens, it projects as a tumor externally. It is its earlier recognition which is needed. This points to the importance of a trained knowledge of the normal extent of what I have ventured to call the “prævascular dulness.” Any dilatation of the aorta will increase the width of this retrosternal dulness and lead us to a timely consideration of the question of aneurism. Mere dulness in this region has other possible explanations, but in the case of aneurism, a pulsation, which perhaps may not have struck the eye, will probably reveal itself to the hand or to the ear applied to the chest-wall, or may be transmitted by the rigid stethoscope to the head of the observer as a perceptible vibration. For this reason the rigid stethoscope is much more reliable in the diagnosis of aneurism than the flexible stethoscope.

Fournier warns us against mistaking for aneurism the syphilitic infiltration in front of the aorta which may simulate aneurism, but which is amenable to treatment.

ANEURISMS OF THE ARCH. H. W. McLaughlin and W. N. Beggs² describe an aneurism of the concavity of the transverse arch in which, as sometimes occurs, the tumor projected anteriorly in the position normally occupied by the heart. I have seen analogous instances. A doubt sometimes arises in connection with this abnormal situation as to whether the case is one of aneurism or of pulsating solid tumor.

ANEURISMS OF THE DESCENDING AORTA. The difficulty of detecting aneurisms of the descending aorta is well exemplified by Renn's case. “The positive symptoms, as observed at the time of admission or recorded in the history, pointed rather toward a new growth. Even the urgent symptoms after rupture gave positive proof only of a large effusion into the left pleural cavity, and at first did not even lead to the assump-

¹ Transactions Pathological Society of London, vol. xlix.

² Journal American Medical Association, August 6, 1898.

tion of internal hemorrhage, as pleurisy with a rapid effusion was not improbable. Only puncture of the pleural cavity, which furnished pure blood, led to a correct diagnosis. The abnormal position of the heart was probably influenced by the pressure of the aneurism from behind."

The Heart in Cases of Aneurism. Calvert's¹ paper and its discussion should permanently dispose of the mistaken impression, which is contrary to the experience of all observers, that aortic aneurism produces hypertrophy of the left ventricle. When hypertrophy does coincide with aneurism some cause independent of the aneurism will generally be found for the hypertrophy.

The Treatment of Aneurism. Treatment by medicines and by diet remains where it was. We are still ignorant of the way in which iodide of potassium acts. We are equally sure that it does not promote clotting, but tends to restrain it, and that it eases the pain and reduces the swelling. Chloride of calcium, it was hoped, would carry out the indication which iodide of potassium failed to fulfil, but we have not heard of any striking results from its use. Two other forms of treatment are now being anxiously watched—the revived method by wire and electrolysis and the novel method by gelatin injections.

THE CURE OF ANEURISM BY GOLD WIRE AND ELECTROLYSIS. W. H. Noble's² paper, though it refers to abdominal aneurism, may be of use in relation to cases of thoracic aneurism. In the case related, of large aneurism of the abdominal aorta, the patient survived six months. There was no recurrence of the aneurism. The operation consisted in introducing a gold-tipped needle and eight and a half feet of No. 30 gold wire. The wire was connected with the positive pole of a battery, the negative pole being attached to a clay plate placed under the buttocks. Seventy milliamperes were passed for half an hour. Transient collapse and cyanosis occurred, but the patient rallied. The wire was left in and the wound closed. Eleven other cases treated in this way are referred to. Four of these were cured and six relieved.

Corson³ has also used the silver wire and electricity, and from the post-mortem evidence furnished by his case, he is able to report a quick coagulation of the blood as a result of the current, while there had been improvement in the radial pulse and relief of dyspnoea for a few hours after the treatment.

THE TREATMENT BY GELATIN INJECTIONS. In 1896 Dastre and Floresco demonstrated the increased coagulability of blood caused by adding to it of a solution of gelatin. Lancereaux turned this observation to clinical account, and found that a gelatin solution injected subcuta-

¹ British Medical Journal, January 14, 1899.

² Philadelphia Medical Journal, June, 1898.

³ Ibid., March 4; Journal American Medical Association, March 18.

neously is absorbed through the lymphatics, and that in any sacculated aneurisms where the blood-stream is slow and the walls uneven this may result in clotting. Such, briefly stated, is the principle of the method which is now on trial, and which has been used not only in aneurism but for the control of hemorrhage.

The solution originally used by Lancereaux was gelatin and common salt, of each 10 grammes; water, 100 grammes, sterilized. Of this 50 c.c. to be injected deeply into the thigh at first, and the injection gradually increased to 150 c.c. Huchard, in a case of uncontrollable hæmoptysis, had used successfully the following solution: Gelatin, 7 grammes; common salt, 10 grammes; water, 1000 grammes; dissolved by warmth, filtered, and sterilized; 50 c.c. were injected under the skin. Lancereaux¹ gives in detail the method which he has finally adopted. The solution he recommends is white gelatin, 4 to 5 grammes; NaCl solution (7 per 1000), 200 c.cm. This is sterilized in a flask at 120° C., and separate samples are preserved at a constant temperature of 38° C. for a few days, to enable those which become turbid or do not solidify on cooling to be rejected. The flask, cork, tube, and tubing used for injections should all be sterilized by boiling. The injection is made from a water-bath at a temperature of 37° C. The injection should be quickly administered in less than a quarter of an hour, the needle being driven into the tissues deeply. Absolute rest is necessary after the injection, and the aneurism must not be palpated. Injections should be repeated every six to eight days. In cases where a large artery arises from the sac, weaker solutions should be employed, and the interval between the injections lengthened to ten days.

In Lancereaux's² two cases of aneurism of the aorta, and in his case of aneurism of the right subclavian, 6 to 8 ounces were injected repeatedly until coagulation of the blood within the sac was obtained. The injection consisted of a 2 per cent. solution of gelatin in normal salt solution. Lancereaux points out that the sacculated form is the only one suitable for this method.

Huchard had successful results in one case by means of fifteen injections, but the treatment was a painful one and not free from danger.

On the other hand, Borner and Barth have reported two fatal instances. In Borner's case the clotting within the aortic aneurism was credited with having produced fatal pressure on the superior vena cava and pulmonary artery; and in Barth's case acute anæmia of the brain was brought about by rapid clotting in the left common carotid. Huchard points out the risks of using any greater strength than 1 per cent. and of injecting at intervals of less than eight to ten days.

¹ Journal de Praticiens, November 19, 1898.

² Medical News, November 19, 1898.

At the sitting of the Academy on October 31st, Laborde¹ alluded to the danger from gelatin containing small particles which might act as coagulant emboli. Lancereaux denied the presence of solid particles, and remarked that if the injections are made subcutaneously they are absorbed by lymphatics and do not excite embolism. Again, since the two conditions which are essential for coagulation—a sluggish blood-stream and a roughness of the vessel walls—are present in aneurismal sacs, but not elsewhere, coagulation will be limited to the latter.

Deguy² has pointed out some of the drawbacks of the subcutaneous gelatin injections—viz., pain, pseudo-inflammatory congestion, and diffuse induration of the tissues of the part, lasting for a few days. There may be also for a day or two slight rise in temperature.

THE INTERNAL ADMINISTRATION OF GELATIN. Carl Beck³ has obtained decided improvement in a man, aged thirty-nine years, with aortic aneurism eroding the sternum, and measuring seven and a half inches in transverse diameter, from the administration of large doses of gelatin. The tumor remained of large size, but gave little pulsation, the hoarseness had almost disappeared, and the patient was able to go about and attend to his business.

Acute Inflammation of the Aorta, with profound myocardial disease, is reported in two cases by F. J. Poynton,⁴ who calls special attention to the association of disease in the aorta and in the heart muscle apart from gross affections of the coronaries.

Tuberculosis of the Aorta. Tubercle in the large vessels is exceedingly rare. It has been shown to occur in the walls of veins (Weigert and Hanau) and in the walls of small arteries (Koch) in general tuberculosis. The cases recorded by Blum⁵ show that the aorta may be involved by extension from without or by direct implantation of the infection on the intima. Blum refers to three cases recorded by Dittrich, Kamen, and Sigg. The nodular affection of the intima has been described by Weigert,⁶ by Flexner,⁷ by Hanot and Levy,⁸ and by Stroebe.⁹ Blum's own cases showed general tuberculosis over and above the lesion of the aorta. He argues that the infective material must have been transplanted from the aortic blood-current rather than introduced by the vasa vasorum. Reference is made to Boinet and Romary's¹⁰ experimental production of lesions in the aorta by the injection of toxins of

¹ Medical News, December 3.

² Journal des Praticiens, November 12, 1898; Therapeutic Gazette, January 16.

³ Medical News, February 18, 1899.

⁴ Lancet, May 20, 1899.

⁵ American Journal of the Medical Sciences, January, 1899.

⁶ Virch. Archiv., Bd. lxxxviii.

⁷ Johns Hopkins Hospital Bulletin.

⁸ Archiv de Med. Exper., 1896.

Centr. für Allg. path. Anat., 1897.

¹⁰ Arch de Méd. Expér., 1897.

tetanus and diphtheria, and to the experiments performed by himself and Michaelis¹ for the production of tuberculous valvulitis.

Arterio-sclerosis. Arterio-sclerosis has been regarded as the normal evolution of age and as a constant characteristic of senility. Tessier and Sesquès² dispute this position and regard arterio-sclerosis as a purely pathological phenomenon, on the strength of their examination of hearts of men dying of old age, between seventy and ninety-four years, without any sign of disease. They have noted a regular hypertrophy of the connective tissue, which may account for the increase above the average weight of the adult heart. This hyperplasia occurs both between the muscle fibres and in the muscular septa, a feature differentiating it from the hyperplasia due to irregular and localized patches of sclerosis.

Clement A. Penrose,³ in his important paper on "Localized Scleroses of the Aorta of Probably Syphilitic Origin," adopts Councilman's division of arterio-scleroses into the *nodular* or *circumscribed* variety and the *diffuse* or *senile* form, and gives a useful summary of the opinions which have been published in connection with the pathology of syphilitic sclerosis.

Valuable references to recent investigations will be found in the review on "Arterio-sclerosis" in Schmidt's *Jahrbucher*, 1899, No. 4.

ARTERIO-SCLEROSIS NODOSA has been studied in its pathological aspects by F. Reich.⁴ He regards it as a primary affection of the intima, the secondary implication of the media being brought about by closure of the vasa vasorum.

CARDIAC HYPERTROPHY IN SCLEROSIS is the subject of an important paper by A. Hasenfeld,⁵ who also refers to cardiac hypertrophy in granular kidney. The variability, in separate cases, of the extent of the arterio-sclerosis in the body best explains the difference observed as regards the cardiac hypertrophy. The work of Ludwig and Thiry, von Bezold, and the experiments of Romberg, Bruhns, and Pässler, justify the conclusion that the vessels of the splanchnic area, which have a regulating function for the general blood-pressure, also exert, when sclerosed, a predominating effect upon the circulation. This *sclerosis of the splanchnic vessels* may occur independently, or it may be absent when the other vessels are involved. Hasenfeld finds that *left ventricular hypertrophy* occurs only when the splanchnic vascular area or else the thoracic aorta are considerably diseased; arterio-sclerosis elsewhere does not seem to produce it. In *granular kidney* he finds that all parts of the heart are invariably hypertrophied; but when the splanchnic area

¹ Deutsche med. Wochenschrift, September 1, 1898.

² Revue de Médecin, January 10, 1899.

³ Johns Hopkins Hospital Bulletin, No. 87.

⁴ Inaug. Dis., Königsberg, 1896.

⁵ Deutsche Archiv für klin. Med., 1898, lix.

is the seat of much arterio-sclerosis the left ventricular hypertrophy predominates.

THE INFLUENCE OF INTERCURRENT AFFECTIONS UPON THE PROGRESS OF ARTERIO-SCLEROSIS is considered by De Buck.¹ He takes special notice of the senile changes, and, in particular, of senile gangrene.

THE TREATMENT OF ARTERIO-SCLEROSIS. Prof. O. Vierordt² is a firm believer in the value of *iodine*, particularly in coronary angina. Its mode of action is not clear, but Vierordt has seen lasting improvement in at least 50 per cent. of the cases of coronary angina treated with it. L. von Schrötter³ takes an opposite view. He is rather skeptical as to the benefit attributed to the action of iodine by Huchard, Vierordt, and Kleist, and he regards treatment at Carlsbad and Marienbad as a purely temporizing measure. *Prevention* is the best part of treatment. We must learn to spare our arteries. He shrewdly remarks that in apportioning rest and labor, and in arranging the daily hygiene, the absolutely different mode of life of various individuals must be taken into consideration, and totally different advice will be needed in separate cases. He dwells upon the value of the several forms of exercises; and since in England, where they are so much practised, arterio-sclerosis is nevertheless so common, he seeks a further explanation for its causation in diet; he discusses also the question of alcohol of milk diet and of the influence of the salts of lime. In severe cases exclusive milk diet is to be combined with digitalis. For the attack of angina the usual treatment is recommended. Von Schrötter is doubtful as to the efficacy of carbon dioxide baths in relaxing the peripheral vessels.

H. Bock⁴ makes a special study of the *dietetic treatment* of arterio-sclerosis. Moderation in food and drink is of primary importance. Exercise is to be taken, but not with a full stomach. As regards residence, altitude up to 800 metres is suitable at first, but often the seaside is preferable. Mineral baths, such as those of Gastein for the older patients, or of Nauheim or Rehme for others, may be of use. Bicycling, if allowed at all, must be of the quietest description.

E. A. Marshall thinks well of the combination of *digitalis* with the nitrites, as suggested by Huchard. During the early stage prior to hypertrophy, the iodides, mercurials, and salines are useful. In the advanced stage, with stiffened arteries and cardiac dilatation, an increase of tension from digitalis has to be avoided. This may be done by administering erythrol tetranitrate every six hours, and 1 milligramme of digitalin every second or third day, according to indications.

¹ Belg. Med., 1898, vol. xxxiii.

² Verhandl. d. XV. Cong. f. innere Med., Wiesbaden, 1897.

³ Therap. d. Gegenwart, January, 1899.

⁴ Zeitschr. f. Diat. u. Physik. Ther., 1898, xi., 1.

Lancereaux and Paulesco,¹ regarding arthritis as being, as well as myxœdema, due to disturbance of the sympathetic, have employed *iodothyryn* (2 to 4 grains daily) in the arterio-sclerosis of rheumatism and gout, and they report good results from its use.

Iodothyryn was administered in the case of a young woman with generalized arterio-sclerosis, and in that of a man affected with chronic rheumatism, gout, and arterio-sclerosis. The initial dose of 0.5 gramme (8 grains) was gradually increased to 3 grammes (45 grains) per day. The female patient had recovered suppleness after four months, and the man had less arterial tension and had lost his articular pains, osteophytes, and trophic disturbance of the nails.²

THE VENOUS SYSTEM.

Thrombosis and Embolism. Fatal cases of pulmonary embolism are often reported. More interesting are those in which the accident is recovered from. Vogt³ had one case of recovery among four cases of pulmonary embolism in child-bed. In this case one of the main branches only seems to have been plugged.

VENOUS THROMBOSIS IN PHTHISIS was found by Ruge and Hierokles⁴ in 19 out of 1778 cases, a percentage of rather more than 1 per cent. Dodwell had previously found the same complication 20 times in 1300 cases. The authors refer to fatty degeneration and desquamation of the vascular endothelium, suggested by Baumgarten, as probably essential to the occurrence of intravenous coagulation, which is not easily explained as a simple result of lessened cardiac force.

THROMBOSIS IN RHEUMATISM is a comparative novelty in the literature of pathology. Special interest, therefore, attaches to Poynton's report of extensive venous thrombosis in severe rheumatic carditis. Three cases under the care of Cheadle and of Lees in which this rare complication was present, are described and the post-mortem results noted. Poynton adds the following remarks :

"In a comprehensive paper by Gatay⁵ on '*La Phlébite Rhumatismale*' two views are put forward in explanation of the thrombosis. One is that of Schmidt, who regarded the thrombosis as primary, and the other is that of Letulle and Gatay, who consider a rheumatic phlebitis to be the first event.

"Thrombosis in rheumatism is quite one of the rarer features of this

¹ Lancet, 1899. ² Acad. de Med., January 3; Medical News, February 18, 1899.

³ Norsk. Mag. for Lægevid, 1897.

⁴ Berl. klin. Wochenschrift, January 23, 1899; British Medical Journal, February 25, 1899.

⁵ La Gazette Hebdomadaire de Médecine et de Chirurgie, February, 1896.

disease. Garrod, in his treatise on rheumatism, quotes the researches of Schmidt and Letulle. Cheadle has met with cases. Gatay, in 1896, described two cases with necropsies; one (Macaigne and Lauren's case) showed an inflammatory change in the vessel wall. Bacteriological results were negative. In this case a thrombus was found in the brachial, axillary, and subclavian veins. Gatay states that it is exceptional for it to start in the jugulars. In one case a thrombus was found in the external jugular only. Petechiae, erythematæ, and fever occur simultaneously with the thrombosis. The veins of the extremities, especially of the lower extremities, are most frequently affected."

Venesection. This is referred to under various headings in these pages. The striking results which it is capable of yielding in urgent symptoms, particularly in cardiac and pulmonary disease, are the probable explanation for the extraordinary faith which had been attached to it and for the irrational abuse which was made of it. Its rational employment has been of late years on the increase, but there are no signs of its use becoming once more a mere medical fashion. Its chief value is in cases where the right heart and lungs are engorged. Paracentesis of the right auricle had been proposed, and has even been practised, for the relief of this condition, but the only recent report is that of a case treated by H. A. Hare. In bronchitis and in pneumonia venesection is occasionally indicated, more commonly in the former than in the latter, to relieve the distention of the right side of the heart. The same object is also sought in asystolism supervening in the course of cardiac incompetence of valvular origin. The performance of venesection in the adult calls for no comment.

Intravenous Injections. The hypodermatic method of treatment has rapidly acquired considerable development. The same progression cannot be expected in the case of the intravenous method, which is accompanied with serious risks and with greater difficulties. It was formerly restricted to grave cases as a last resort, and limited to the injection of blood or of saline solution. It is proposed that these injections should now be made the channel for medication, as in the case of cyanide of mercury injections for syphilis, and for alimentation, though in this direction little has hitherto been achieved. Intravenous injections of saline solution are being more freely used, and probably more benefit may be secured by their employment in the future.

Cox,¹ of Shanghai, describes an efficient method for injecting a warm saline solution at the rate of one ounce a minute under a pressure of two and a half feet of water, by which, in the early stages, he hopes to reduce the mortality from the collapse of cholera from 50 to 15 per cent.

¹ British Medical Journal, February 4, 1899.

The injection, when properly managed, can be continued for hours with very little discomfort to the patient.

DISEASES OF THE PERICARDIUM.

Absence of Pericardium. This rare anomaly was found by C. Powell White¹ in the body of an adult woman, in whom the heart lay in contact with the base of the left lung, the serous membrane passing directly from the base of the heart on to the root of the lung.

Strangulated Hernia in the Pericardial Sac. McDowell² reports the rather sudden death of a Kaffir, two days after the onset of pain at the navel and at the pit of the stomach, with uneasiness of the heart. The pericardium contained a large quantity of blood-like fluid, and, lying beneath the heart, a portion of the ileum distant about four feet from the cæcum and about eighteen inches long. The gut was strangulated through an opening the size of a sixpence in the tendinous portion.

Hemorrhagic Pericarditis. The fact that hemorrhagic pleurisy may be recovered from, even when tuberculous, warrants a fairly hopeful prognosis in cases in which aspiration yields bloody fluid. George G. Sears³ has found eleven recorded cases of recovery, and this forms a large proportion in the total list of published cases of paracentesis, which he estimates at a little over one hundred. In the instance which he relates the patient, from whose pericardium ten ounces of bloody fluid were aspirated in the course of an attack of left pneumonia and right pleurisy, made a good recovery. Sears is of the opinion that the view generally adopted, that the hemorrhagic character of a pericardial effusion is very frequently due to tuberculous influences, may have to be modified.

Pericardial Effusions, Serous and Purulent. THE SITUATION OF THE FLUID WITHIN THE PERICARDIUM. Terrier and Reymond's⁴ admirable monograph on the "Surgery of the Heart," although purely surgical, will be of service to physicians in connection with a study of the anatomical relations of the pericardial and pleural sacs, with the sites of collection of fluid within them, and with the selection of the situation for puncture or for incision.

With reference to the varying distribution of the intrapericardial fluid in the sitting and in the recumbent posture, and in the case of a communication in the case, or of non-communication with the outer air, Voinitch-Simojentzky's results from injections of warm gelatin into the pericardium are given, together with his illustrations: (1) *When commu-*

¹ British Medical Journal, November 5, 1898.

² Ibid., January 7, 1899.

³ Boston Medical and Surgical Journal, September 22, 1889.

⁴ Chirurgie du Cœur et du Péricarde, Paris, 1898.

nication exists in the supine posture, after an injection of about 12 to 20 grammes the gelatin settles along the right cardiac border, in the inter-auricular sinus, between the great vessels at the base, and in the depressions on either side of the spinal column (the larger is on the right side). *In the sitting posture* the gelatin collects at the lower and anterior part of the pericardium, especially at its left angle; the inferior border of the right ventricle is also brought into closer contact with the anterior parietes. (2) *When no air is admitted* differences are observed according to the size of the injection. *In the supine position* a 400-grammes injection accumulates chiefly in front of the heart, above and below the fifth space, where the heart approaches more closely the thoracic wall. An injection of 60 c.c. collects chiefly in front of the great vessels and in the lower pericardial groove. *In the upright position* the collection occurs chiefly at the region of the apex.

Experimental injections into the pericardium have also been made by Schule¹ on the dead body. He finds that the diagnosis of fluid is certain only when the dulness extends outside the site of the cardiac apex. The three-cornered dulness commences, according to him, when 250 c.cm. have been run in. The greater distention of the pericardium occurs almost exclusively downward and to the left. When 700 to 800 c.cm. have been injected it becomes impossible to force water through the aorta into the ventricle.

LATENT AND EPHEMERAL PERICARDIAL EFFUSIONS. A paper which was read by me before the Clinical Society,² and a previous communication to the *Lancet*, November 21, 1896, drew attention to the frequency in rheumatism, Bright's disease, and valvular affections, with loss of compensation, of pericardial effusion of moderate size and of short duration, lasting from one to three or four days, and unattended by any symptoms in patients confined to their bed. In rheumatism this effusion is of specially common occurrence, and the increased area of precordial dulness due to it might easily lead to a mistaken diagnosis of cardiac dilatation if the distinctive signs which identify the presence of fluid were overlooked.

THE OPERATIVE TREATMENT OF PERICARDIAL EFFUSIONS. Aspiration, incision, and incision after preliminary resection of a costal cartilage are the three methods available. Brentano³ believes that puncture involves a risk of wounding the pleura or the heart (which always remains, he thinks, close to the anterior chest-wall), while it never com-

¹ Münch. med. Wochenschrift, December 20, 1898; British Medical Journal, March 11, 1899.

² Vol. xxxi., 1898.

³ Deutsche med. Wochenschrift, December 20, 1898; British Medical Journal, March 11, 1899.

pletely empties the sac. The danger to the pleura and to the mammary vessels, incidental to simple incisions, is obviated by dividing the centre of the fifth costal cartilage and resecting its two halves; for this it is not essential to produce general anaesthesia. The exposed pericardial membrane is first punctured, then incised, and its edges secured to the edges of the wound. This facilitates evacuation and the subsequent washings with sterilized water or weak lysol solution, which in one case he was able to repeat daily without any detriment. Of his five cases only one (a rheumatic effusion) ultimately recovered.

Girardeau¹ differs from Brentano in giving the preference to aspiration rather than to incision, even in purulent effusions, unless these be putrid. He selects a spot in the fourth or fifth interspace, about two inches to the left of the sternum. Although the two layers of the pleura must often be perforated, pneumothorax never occurs, and empyema or pneumonia are exceptional results. Incision may subsequently be needed, but he states that a purulent pericarditis is sometimes cured by aspiration alone. Our experience does not support this contention, but it is still more difficult to agree with Girardeau's opinion, that paracentesis should be resorted to in all cases as soon as a large pericardial effusion has been recognized (according to him by the occurrence of a tympanitic resonance—rarely of a dulness—at the left posterior base). In rheumatism, as I have pointed out, a pericardial effusion is a frequent event and its spontaneous reabsorption the rule.

Lavage of the Heart and Pericardium in Purulent Pericarditis.

In Chimenti's² case of purulent pericarditis, almost immediately following an attack of influenza, an exploratory puncture was made first in the seventh space with negative results, afterward successfully in the fourth, and this was followed by incision. After the evacuation of a litre of pus the cavity was freely irrigated with warm borie solution. Tremor and syncope occurred during the washing, but the patient rallied, and a drainage tube was left in the pericardial sac. She made a complete recovery in forty-five days.

Incision and drainage were also successful in Ljunggren's³ case of purulent pericarditis. He prefers incision to the dangers of puncture.

J. H. Burtenshaw's⁴ case of paracentesis pericardii loses some of its interest, owing to the absence of an autopsy, but his paper includes a review of the literature of the subject.

For the aspiration of *serous* effusions, Terrier and Raymond recommend a preliminary incision over the fifth left space, about 6 cm. from

¹ La Semaine Médicale, September 14, 1898.

² Annal. de l'Acad. Medico-Chir. di Perugia, vol. x., g. i.

³ Nord. Med. Archiv, ix. 6; Journal American Medical Association, March 25, 1899.

⁴ Medical News, March 11, 1899.

the left edge of the sternum. In most cases the needle will then be found to have traversed the pleura. In *purulent* effusion the danger of implicating the latter should make us prefer the immediate edge of the sternum in the sixth left space, as recommended by H. A. Hare¹ and Voinitch-Sianojentsky.² Pericardiotomy is best performed on the left of the sternum, at the level of the sixth costal cartilage, the preliminary resection of which is needed. The sitting posture, to be assumed as soon as possible after the operation, facilitates the complete evacuation of the pleura. On the whole, *drainage* by tube or gauze is to be preferred to washing out. The possible value of the operation in chronic, non-purulent pericarditis (not in passive effusion) is considered.

Adherent Pericardium and its Physical Signs and Diagnosis. This was discussed by Sir William Broadbent³ before the Medical Society of London. His remarks and those of other speakers emphasized the well-known difficulty of diagnosing the affection. Dr. Lees was inclined to believe that in rheumatic cases the dilatation, which is generally regarded as a consequence of the agglutination, is really antecedent to and rendered permanent by the latter, and is the direct result of the toxic process special to rheumatism. This view derives some support from the observation which others must have made as well as myself, that in complete pericardial adhesion both ventricles are often evenly dilated, and not only the right ventricle, as is sometimes stated to be the rule.

Fibrous Pericarditis; Pericarditis Callosa. Galvagni⁴ points out that a diagnosis is rendered more difficult by the insidious origin of the condition in childhood. The gradual symptoms of central obstruction due to narrowing of the cardiac cavity culminate in a small, irregular pulse, feebleness of the heart-sounds, the second sound being sometimes reduplicated, cyanosis of the face, prominent non-pulsatile jugulars, and small, thin-walled arteries. Although the liver may be affected and ascites may result, there is often no dilatation of the right heart and very little anasarca. Systolic retraction is not often present, but the heart's dulness and the apex-beat are almost absolutely fixed. In the three cases studied by Galvagni there was neither a *pulsus paradoxus* nor any inspiratory swelling of the cervical veins.

In J. Blumfeld's⁵ case, occurring at the earliest age perhaps on record (fifteen months), the pericardium was universally adherent and much thickened, the glands presenting foci of caseation. Both ventricles were dilated and hypertrophied and the abdomen distended with fluid. He

¹ Medical and Surgical Congress, Washington, May, 1897.

² Thèse de doct. St. Petersburg, 1897; Archives russes de Chir, St. Petersburg, 1897.

³ Transactions Medical Society of London, vol. xxi.

⁴ Clin. Modern., An. 4, No. 341.

⁵ British Medical Journal, December 31, 1898.

discusses the varieties of the indurative affection and the causes, chiefly tuberculous and septic, which have been alleged for it.¹

Malignant Pericarditis. An instance of *cancerous pericarditis* secondary to malignant stricture of the œsophagus has been reported by R. G. Hebb.²

Indurative Mediastino-Pericarditis. It would be difficult to draw a sharp demarcation between the groups of cases which, with Frederick T. Roberts,³ we may term "pericarditis interna et externa," or universal adhesions without implication of the mediastinum, and "mediastino-pericarditis indurativa." Roberts concludes that the foundation of mediastino-pericarditis, as well as of pericarditis interna et externa, is generally laid early in life, while simple chronic mediastinitis, of which Harris gives three cases (the youngest being thirty-seven years), is of different etiology, and usually occurs later in life. Strangely, the twelve cases collected by Whipham,⁴ except two (aged nine, and one and a quarter years respectively), occurred in adults over twenty-one years of age. As a possible explanation for this contrast the writer would suggest that the two series may have been gathered from somewhat different fields of practice.

Calcification of the Pericardium. This is a rare and remarkable condition, in which the adhesions between the two layers may become so much impregnated and stiffened by salts of lime that the ventricular contraction must be seriously impeded. It has been supposed that in the more extreme cases the circulation through the heart may be kept up mainly by the auricles, which seem to escape calcification. In an instance which occurred under my own observation⁵ this seems to have been the case. The patient, aged forty-nine years, died from the exhausting effects of fifty-twoappings. The ascites had begun five years previously. The diagnosis of nodular cirrhosis was made on the strength of the predominance of ascites, the enlargement of the liver, the absence of albuminuria and of any apparent heart-failure, the pulse being always good and strong. She had had rheumatic fever at the age of eighteen years, and twice since. Mr. Warrington Haward carried out the operation of laparotomy devised by Drummond and Morison for the cure of ascites. The patient recovered, but with only temporary relief from the ascites. The post-mortem examination showed that the pericardium was universally adherent to the heart, and that calcification extended upward as far as the auriculo-ventricular groove, but not over the auricles; these

¹ See also Transactions Pathological Society of London, December 15, 1896.

² Transactions Pathological Society, vol. xlix.

³ Clifford Allbutt's System of Medicine—Diseases of the Mediastinum and Thymus Gland.

⁴ Lancet, April 1 and 8, 1899.

⁵ Medical Press and Circular, April 19, 1899.

were not rigid, and may not have been much interfered with in their contraction. The ventricular cavities were only slightly dilated, the membranes normal, the orifices slightly dilated. The myocardium was rather thin and soft. There was no great hypertrophy of the walls of the auricles. The liver was not cirrhotic. Drummond and Morison have recorded a case in which at the operation the liver was found not to be cirrhotic, but the cause of the recurrent ascites was not made out, no post-mortem examination having been obtained. This case was similar to the one here described, for the patient survived the operation nineteen months and was tapped sixty-nine times.

A case of calcification of an adherent pericardium in a young man has also been reported by James Calvert and T. Strangeways Pigg.¹ This was associated with the presence of a collection of pus between the right ventricle and the parietal pericardium, the pus extending into the muscle of the left ventricle near the apex. There were also scattered soft nodules containing fluid yellow pus. The onset of the suppuration may, perhaps, be traced to the date of a rigor, fourteen days before the patient's admission into the hospital and three weeks prior to his death. He had never been laid up in bed before, but for five years had suffered from heart symptoms since he first fainted and felt the heart "tumbling about" after an exhausting walk. The pericardium was greatly thickened, adherent over the greater part of the heart, and calcified, forming a rigid casing over both ventricles and over the front and sides of the right auricle. The left ventricle was somewhat hypertrophied, but no dilatation is mentioned in the report. There was no tubercle and no actinomycetes.

The Surgical Treatment of Pericardial Adhesions. At a sitting of the Surgical Society of Paris, October 26th,² Delorme recommended the division or the detachment of adhesions between the heart and the pericardium when they cause grave troubles. Adhesions of very old standing might be insusceptible to interference, but in other cases pericardiotomy might be performed through an incision two and a half to three inches in length at the level of the fifth costal cartilage, the pericardium being opened horizontally a little above the diaphragm. An attempt should then be made to free the right side of the heart from adhesions. A second linear incision may be made in the fourth space, if necessary, and part of the fourth and possibly of the third cartilage resected. If the adhesions are too extensive the pericardium might be divided on a level with the diaphragmatic attachment to clear the apex of the heart, an instalment of relief which will be found of great benefit.

¹ Transactions Pathological Society of London, vol. xlix.

² Medical News, December 3, 1898.

Terrier's¹ comments on the paper were that one need not hesitate to make the incision as long as it may be necessary, and that in other operations on the heart even a portion of the sternum had been sacrificed.

LOSS OF COMPENSATION.

Etiology. Putting aside invincible mechanical obstacles not to be overcome even by the strongest heart, loss of compensation is the lower level reached in a progressive failure of cardiac nutrition and power, each successive beat being less able than the previous one to contend with the difficulty in the circulation. But in many cases there is a determining factor, such as bronchitis or exhaustion, which acts with directness and rapidity, bringing about the change from a state of relative inadequacy into one of absolute incompetence. Where this factor is not manifest we may suspect that the overtaxed heart has become specially susceptible to visceral influences acting upon it through nervous channels. That this may be the final mechanism of loss of compensation is suggested by the well-known observation that whereas mechanical strain distends the heart temporarily, severe emotions lead to a dilatation of greater extent, which may never be completely recovered from. The cardiac innervation, or the relation between the heart nerves and the tone or nutrition of the automatic muscular fibres, has undergone some alteration, the performance of which is not easily explained.

INCOMPETENCE DUE TO RENAL DISEASE. After describing the points of distinction between cardiac incompetence originating in heart disease and that due secondarily to chronic nephritis, Billings,² of Chicago, is compelled to own that in many cases the differentiation is not easy.

INCOMPETENCE DUE TO PERICARDIAL AND PLEURAL ADHESIONS. The combined effect of dense pleural and pericardial adhesions upon the heart is disastrous. This is set forth in an important article by Taylor,³ who gives various references to previous workers. He points out that in some cases ascites occurs early, and being combined with passive engorgement of the liver, often leads to a suspicion of cirrhosis. The condition is really one of cardiac incapacity, chiefly of the right side, although the local evidences of cardiac disease may be insignificant, and attention may be mainly directed to the affection of the serous membranes. Often, however, this not very uncommon combination is overlooked or misunderstood.

Prognosis. **HEART DISEASE AND MATRIMONY.** Opinions will differ as to where that limit should be drawn in the case of valvular disease, and the question will probably never be settled any more than

¹ Medical News, December 3, 1898

² Medical Record, June 18, 1898.

³ Lancet, October 29, 1898.

that of the *prognosis of individual murmurs*. Some of the latter are loud and relatively harmless. This is particularly true of the functional murmurs, and it is also true of the mitral systolic murmur when this is accompanied with a good pulse and a strong ventricle. There are, however, murmurs which most urgently call for an absolute veto. It is, of course, obvious that subjects in whom valvular disease has at any previous time led to loss of compensation should not be allowed to marry. Again, among valvular disorders *mitral stenosis* is one which should be, in my opinion, regarded as an absolute objection. When the clinical features of this disease are markedly developed matrimony should not be countenanced. The special dangers which arise in connection with pregnancy and parturition in mitral stenosis are well known, as well as its evil prognosis as regards duration of life. Sometimes, however, the insidious beginnings of the affection may have passed unnoticed and the first discovery of the cardiac trouble may be made at the hour of childbed. The prognosis of *aortic regurgitation* must depend upon the degree of the lesion, and here, again, even the expert must feel that a correct estimate of the severity of the valvular lesion is hardly possible in all the cases. No physician would recommend matrimony, but where, in addition, the second sound of the aortic valves is extinguished, even though symptoms of failure of the heart may not have developed, he should set his face against marriage. The future of hearts with systolic aortic murmurs is always uncertain, and the severity of the lesion bears no proportion to the loudness or character of the murmurs heard. Cases with loud murmurs may not be progressive or suffer from serious interference with the circulation, but there is always a danger of further damage being accidentally induced through strain or infection; these are bad subjects for matrimony.

Among the views which have recently been expressed upon this aspect of prognosis we may mention the following:

Jess,¹ in discussing this question, states that loss of compensation is an absolute contraindication. Social position is an important factor. The management of pregnancy and of delivery needs to be carefully considered.

Vinay² agrees with Jaccoud and Huchard, that women may marry when no loss of compensation has occurred. During gestation, repose, milk diet, aperients, and the frequent use of dry cupping to the thorax should be resorted to, to avoid gravido-cardiac complications.

O. Feis³ dwells upon the risks incurred during the periods of gestation and of childbed by the bearers of non-compensated heart lesions.

¹ Münch. med. Wochenschrift, October 11, 1898.

² Lyon Médical, January 8, 1899; British Medical Journal, January 28, 1899.

³ Volkmann's klinische Vorträge, 213; Medical Record, December 3, 1898.

The character of the lesion introduces a great difference between cases. Of all valvular lesions mitral stenosis is the most fatal. The frequency of abortions and miscarriages in cases of heart disease may be regarded as a fortunate provision of nature.

VALVULAR DISEASES.

The Valvular Diseases of the Right Side of the Heart. The vast preponderance of the lesions of the left heart accounts for the comparative neglect in literature of an adequate consideration of those of the right side. A systematic grouping of the facts scattered through the literature was needed, and this has been ably accomplished by G. Newton Pitt.¹

Mitral Stenosis. Sansom² returns to a consideration of mitral stenosis in the light of recent investigations. He reasserts his opinion, that this is in the main a rheumatic disease, though its causation is not absolutely limited to rheumatic influences. He does not hold, with Teissier, that stenosis is due to tuberculosis, but the association of mitral stenosis with tuberculosis is discussed from another point of view, and he shows that out of an aggregate of thirty-one cases of this association verified post-mortem only sixteen were cases of *uncomplicated* mitral stenosis. The influence of the other valvular lesions should, therefore, not be left out of account. The rare occurrence of congenital stenosis, and the frequency of a combination of mitral stenosis with anæmia and chlorosis, which has been pointed out by various observers, are also dwelt upon. In referring to the vexed questions of the mechanism of the murmur and of the mechanics of the stenosed valve and of the heart, Sansom points out that his views as to the participation of the auricle in the production of the apex beat of mitral stenosis have been confirmed by Potain and Samways. As to prognosis, he finds the average age at death to be 32.7 years (this series of 61 patients included many children). Hayden's cases, 42 in number, gave 37.8 years; Broadbent's 53 cases, 33 years for males and 37 to 38 years for females. Lastly, Samways, from the cases recorded at Guy's Hospital during ten years, finds an average age of 38½ years for males and females; the age rises in the less pronounced form to 43.6 years, and it falls in the more extreme cases to 33.6 years.

Harry Campbell,³ in commenting upon the lecture, expresses a view that the slit-like aperture and the funnel-shape of the valve favor the coefficient of discharge through the orifice. During the systolic contrac-

¹ Clifford Allbutt's System of Medicine, vol. vi.

² British Medical Journal, June 25, 1898.

³ Ibid., July 9, 1898.

tion of the mitral sphincter the slit would tend to be converted into a rounded aperture and the flow reduced.

The Prognosis of the Several Valvular Affections. Gillespie's review of 2368 cases of cardiac disease is a most important comparative study of the relative fatality of valvular lesions. He finds that the aortic lesions are more fatal than the mitral, and that the lesions of any valve are more fatal when complicated with that of another valve. In males the aortic lesions do not present such a high death-rate as in females, and the same is true of the mitral cases, but lesions of both valves prove more fatal in males than in females. For other facts of importance the original paper should be consulted.

ENDOCARDITIS.

The Micro-organisms of Endocarditis. Dossy² found in his 36 cases of endocarditis (3 of which were ulcerative and showed pneumococci, the others verrucose) that 34 presented bacteria—viz., the pneumococcus in 13, the streptococcus in 12, the staphylococcus pyogenes aureus in 2, and albus in 1, etc. The pneumococcus and streptococcus, according to him, are those most frequently concerned in endocarditis, either alone or associated with others. The pneumococcus infection is more frequent in aortic endocarditis, the streptococcus infection in mitral endocarditis.

Gonorrhœal Septicæmia and Ulcerative Endocarditis are the subject of an article by William Sydney Thayer and Jesse William Lazear. The discovery of gonococci in the circulating blood and in vegetations was made by S. Blum in 1895. The case related is stated to be the first in which the tricuspid valve alone has been affected in a gonorrhœal endocarditis. The authors give the following localization of the lesion in fifteen undoubted cases :

Left heart :	{	Aortic valve . . .	7.	Right heart :	{	Tricuspid valve . . .	1.
		Mitral valve . . .	2.			Pulmonary valve . . .	2.
		Both valves . . .	2.				
Both sides : All four valves						1.	

The paper embodies a review of the literature of recorded cases. The following are some of the conclusions arrived at : The endocarditis is commonly due to the direct action of the gonococcus, but it may be the outcome of a superadded infection ; a gonorrhœal pericarditis is apt to occur, but this is less frequent than the endocarditis ; grave myocardial changes, such as necrosis, diffuse suppuration, and embolic abscesses, are

¹ Edinburgh Hospital Reports, 1898, vol. v.

² Boston Medical and Surgical Journal, September 1, 1898.

³ Journal of Experimental Medicine, January, 1899.

common in severe gonorrhœal septicæmia; it is sometimes possible to diagnose gonorrhœal septicæmia by detection of gonococci in the circulating blood. Lastly, a gonorrhœal endocarditis may present almost any degree of severity, the milder cases recovering completely, others leaving a permanent valvular lesion.

Malignant Endocarditis is discussed by Herzog,¹ who reports nine cases of the disease. He notices that the symptoms during life may be variable, and that the clinical evidence of the lesion may be obtained with difficulty or may even be absent.

A case of *afebrile acute endocarditis*, narrated by O'Donovan,² of Baltimore, is an instance in point, showing the great uncertainty which surrounds the diagnosis of some cases and the variety of clinical forms assumed by the disease. It is to be regretted that no post-mortem examination is appended to this interesting case.

Rheumatic Endocarditis. Sansom's³ essentially practical "Purvis Oration" is devoted to the rheumatic affections of the heart. Their frequency is greatest before the age of thirty-five years, and particularly great in childhood. Fœtal endocarditis is by no means rare, and it is apt to attack the right side of the heart. Rauchfuss, of St. Petersburg, finds, however, that the left heart, in the absence of malformation, is as frequently affected with fœtal endocarditis as the right. Sansom is led from observation to believe in the rheumatic nature of this fœtal endocarditis, the changes in valves, cords, and columns being apparently identical with those known as rheumatic.

Again, in childhood the whole heart is affected by the rheumatic process ("carditis," Sturges). The pervading character of the inflammation had been demonstrated by Sansom in 1883 in the infiltration of the fibrous tissues and of the interstices between the muscular bundles encircling the valves. In childhood the symptoms are well known to be deceptive; Wunderlich had pointed out that pericarditis and endocarditis sometimes set up no pyrexia in children. It is chiefly in children that D. B. Lees and F. J. Poynton have described the acute dilatations which they have so often observed as a result of rheumatic affections of the heart, even without much arthritis or pyrexia. Sansom agrees with their view, that the increase in dulness, which is rapid and transient, is not due to pericardial effusion. He aptly compares the changes taking place in the swollen heart and its serous membrane to those occurring in a joint inflamed through rheumatism. Strangely, however, he does not carry this analogy so far as to describe the increased effusion which is part of the arthritis.

¹ Deutsche med. Wochenschrift, November 10, 1898; British Medical Journal, February 4, 1899.

² Medical News, July 23, 1898.

³ Lancet, December 10, 1898.

In the adult Byrom Bramwell believes that the tricuspid is involved more frequently than is generally supposed, without becoming the seat of permanent changes.

The Treatment of Endocarditis. THE SERUM TREATMENT. We have no test for the degrees of malignancy, but we are aware that vegetative endocarditis of the milder type may be spontaneously recovered from. This circumstance must weaken the clinical evidence in support of serum-therapy, and it leaves us less able to speak with confidence of its value. On the other hand, since we are in the hands of chance as to the efficacy of any given serum in each individual case, some of the recorded failures may have been due to the employment of the wrong serum. So long as we fail to discover a serum which will react promptly and survey in all cases, there are strong reasons for the use of sera combining various antitoxins. The following opinions and results reflect the general position of the question :

In the discussion opened at the Edinburgh meeting by Prof. Wright, of Netley, on the "Serum Diagnosis and Therapeutics in Infective Diseases," Bruce² related two cases in children in which antistreptococcus serum had been successfully employed. In the second case the temperature ran a typically pyæmic course. On the nineteenth day of the illness some antistreptococcus serum was injected and the ordinary intermission ensued, but two days later the temperature again went up and all the symptoms returned. This suggested that the serum used might have been faulty. A fresh supply was procured from another source and 10 c.c. were injected. Immediate and permanent recovery followed. Bruce draws the inferences : (1) That we may confidently look for success with antistreptococcus serum in a considerable number of cases of septicæmia ; (2) that the favorable effects, if any, are produced with remarkable rapidity ; (3) that the serum may succeed where other remedies had failed ; and (4) that success might possibly attend one kind of serum after another kind had proved useless.

Ulcerative Endocarditis Cured by Antistaphylococcus Serum. Moritz's case is published as the first instance of success with this serum in a fatal disease, the mortality of which is said to be 80 per cent. The patient, aged twenty-two years, admitted on January 22d, had had gonorrhœa and cystitis eight months previously, but no gonococci could be discovered. A musical murmur was heard, and the diagnosis of malignant endocarditis seemed to be beyond doubt. Moritz determined to inject antistaphylococcus serum, a previous case having shown after death the presence of the *staphylococcus albus* and a

¹ Lancet, August 20, 1898.

Ibid.

³ Zur Serumtherapie bei Endocarditis maligna. St. Petersburg, 1898.

The acute symptoms disappeared after six injections of 5 c.cm. of the serum. The temperature was normal on March 11th. Metastatic inflammations were observed in the right calf and in the left ankle after two of these injections, but no suppuration occurred.

C. P. Thomas,¹ of Spokane, Washington, has had a series of successful cases of acute sepsis treated by Marmorek's antistreptococcus serum. At least 20 c.cm. should be given at a first dose, and the injections repeated every twenty-four hours, if necessary. On the other hand, according to J. Edward Herman, Marmorek's antistreptococcic serum is regarded as not free from danger by Reynolds, W. H. Thomson, and R. C. Norris, as doubtful in its efficacy by Mundé, Parks, Marx, Charles Jewett, Watson Cheyne, J. W. Williams, and by Cobbett as not to be recommended.

Emil Boix² gives a critical review of the work done in connection with the strepto-sera, and he points to the conclusion that compound sera, derived from animals infected with a number of different streptococci, must be more and more resorted to. In the Louvain laboratories horses are injected with a mixture of at least five different kinds. A universal serum would be the ideal.

DIGITALIS IN RHEUMATIC ENDOCARDITIS. The *pros* and *cons* of digitalis are discussed by Sansom³ in connection with the peculiarities of rheumatic endocarditis. He insists that for weeks and even months after the obvious symptoms of rheumatism have disappeared the rheumatic disease in and about the heart may not be absolutely quiescent—changes are slowly going on; and, again, there may be successive storms of the disease, with alternating enlargements and shrinkings of the heart. The presence or the absence of this rheumatic activity of the cardiac disease will determine whether digitalis is to prove of use or to be ineffectual or even harmful. Lauder Brunton and Theodore Cash have pointed out that “the administration of digitalis or of similar drugs to patients in a febrile condition is likely to have much less effect on the pulse than at the normal temperature, or even no effect if the temperature be very high, and when the temperature begins to fall the pulse becomes slower; this slowness is increased if digitalis has been given previously. They think that digitalis and its congeners, if given at all when the temperature is high, should be given with great care, for fear of producing too great a depression of the pulse during defervescence.” This remark has its bearing upon the use of digitalis in pneumonia. Sansom thinks that not only during the rheumatic pyrexia, but so long as the heart

¹ Journal American Medical Association, February 18, 1899.

² Archiv Gén. de Médecine, October, November, December, 1898; Medical Record, February 11, 1899.

³ Lancet, December 10, 1898.

structures are actively infiltrated during rheumatism, digitalis is often inert or harmful.

LOCAL TREATMENT. R. Caton,¹ of Liverpool, advocates the treatment by blistering, not only as a relief for the pain but as a curative and preventive agent in rheumatic endocarditis—a revival of the late Herbert Davies' treatment of arthritis by blisters. Small blisters are applied on successive or alternate days at contiguous spots from the apex upward. This, in Caton's opinion, checks the cardiac inflammation. In France much use has been made of the thermo-cautery, so-called *épouille de feu*.² Sansom³ is not convinced that these methods of counter-irritation have any beneficial effect upon the heart beyond the relief of the subjective sensations. More relief is obtained by the ice-bag applied every alternate half-hour. This appears to allay the heart's tumults, and a temporary dilatation of the heart may subside in two or three days. After the ice-bag treatment has given relief, iodide of ammonium ointment (5j to 5j) is a good and a colorless application, to be rubbed in and left over the præcordium.

MYOCARDITIS AND DILATATION.

The Clinical Diagnosis of Myocarditis. apart from the endocarditis and pericarditis which are such frequent complications, is still in an unsatisfactory condition. This is pointed out by W. P. Herringham, in connection with a case of myocarditis in rheumatic fever leading to sudden death. Three symptoms have been ascribed to myocarditis by MacLagan:⁴ delirium, præcordial and epigastric pain, and cyanosis. Delirium was not present in Herringham's case and not mentioned in some other cases. Instances of sudden death from myocarditis have been reported by Goodhard and by Southey,⁵ by Samuel West, and by others.

Von Leyden's lecture in the *International Clinics* for 1898 is the latest authoritative account, and should be consulted. He deals with myocarditis in the broader sense, including chronic changes which we are accustomed to class as degeneracies.

L. F. Bishop,⁷ describing fully the symptoms and course of myocarditis complicating severe affections, wisely urges, in cases of temporary, careful limitations as regards muscular exertion, bulk of food, and, requi-

¹ Edinburgh Medical Journal, April, 1899.

² Clinical Society Transactions, vol. xxxi.

³ Twentieth Century Practice of Medicine, vol. ii.

⁴ Clinical Society Transactions, vol. xiii.

⁵ Transactions Pathological Society of London, vol. xxxiii.

⁷ Medical Record, June 18, 1898.

cially, amount of alcohol. The advantage of the latter without its relative abuse is very difficult to secure in cardiac cases.

Dilatation and Heart Complications in Diphtheria. Hibbard¹ regards a great frequency of pulse as ominous; variations in rhythm and volume are premonitory of cardiac complications. A systolic murmur is heard at the base in about one case in ten, usually due to dilatation, but in some instances to valvulitis. Great, therefore, is the importance of examining for an increased cardiac dulness and for an accentuation of the pulmonary sound, to determine the presence or the absence of dilatation.

Acute Dilatation of the Heart in Rheumatic Fever. This has been described by David B. Lees,² chiefly in children. He likens it to the acute dilatation arising from influenza, and attributes it to some microbic or toxic action on the cardiac muscle, similar to the effect of dilute solutions of lactic acid and of certain drugs in causing cardiac dilatation, as demonstrated some years ago by Gaskell.

The general conclusions arrived at by Lees have met with acceptance; and there is no doubt that the tendency of rheumatism is to relax the myocardium. Lees is of opinion that although the transitory cases of dilatation may be due to a mere congestion of the muscles, in other cases some nutritive change due to toxic influence must be present.

The Diagnosis of Cardiac Dilatation by Physical Signs. The chief features in David B. Lees'³ opening remarks in a discussion on "Rheumatic Heart Disease in Children," at the Edinburgh meeting, were the recognition of a rheumatic carditis involving the entire heart, with a production of murmurs as its result, as well as the pericardium, and the cardiac dilatation which Lees has traced by percussion in many cases of rheumatism. As pointed out by myself in the same discussion and elsewhere, the difficulty in all such cases is to exclude the presence of a superadded effusion as a cause for the increased dulness attributed to dilatation. In this connection Lees makes the following remarks: "Ewart thinks that fluid in the pericardial cavity distends the pericardial sac at its attachment to the diaphragm, and that the right and left margins of the precordial dulness then slope outward as they descend, meeting the horizontal line of absolute liver dulness at an acute angle. The fact of cardiac dilatation accompanying rheumatic pericarditis makes this point very difficult to determine with accuracy, and practically deprives it of value."

If I may be permitted to venture a comment upon this criticism, I would submit that its last statements really beg the question, and that further

¹ Medical Record, September 24, 1898.

² Transactions Royal Med.-Chir. Soc., vol. lxxxi.

³ British Medical Journal, October 15, 1898.

evidence is needed before the principles of diagnosis between dilatation and effusion, first suggested by Rotch, and subsequently elaborated by me, can be controverted. Pleximetric percussion, which is discredited by Lees, is capable of great precision, and is entirely reliable when performed with the small flange, which Sanson's pleximeter provides, as well as the long flange, against which Lees' remarks are directed. The heavy percussion which he describes is not an essential feature in the pleximetric method. The lightest percussion can be used whenever it is required. Moreover, any advantage which might be claimed for finger-percussion is available for those who are also trained in the use of the pleximeter.

The interpretation of an increased area of dulness over the præcordium must, of course, remain to a certain extent a matter of opinion, so long as there is no absolute unanimity between observers as to the distinctive characteristics of the outline of dulness which is due to pure dilatation of the heart and of that which is due to effusion. Until these differences are more generally appreciated a mere increase of dulness over the cardiac area cannot possess the demonstrative value which would belong to it if it were evident on the face of the observation that either one or the other of the two causes of increased dulness had been excluded.

I am of the impression that in some cases of dilatation there is in addition an increase in the fluid contents of the pericardium. The occurrence of this effusion is often a passing episode; I have repeatedly noticed it in the course of severe heart disease, and it is also one of the frequent, though usually unobserved, complications of the rheumatic state. It would be important, therefore, to show the possibility of some of the dulness having been due to effusion. I may, perhaps, be allowed to disclaim an opinion which through some stenographic error has chanced to be reported and widely reproduced. I have never thought and never taught that dilatation was always accompanied with effusion. It has struck me, however, that when this combination happens to exist it might be easy to attribute to dilatation alone an increase in dulness which might, in great part, be accounted for by a slight effusion coinciding with the dilatation.

ANGINA AND THE NERVOUS AFFECTIONS OF THE HEART.

It seems impossible to separate strictly the neuroses of the heart and the varieties of angina. Both groups present some almost identical nervous symptoms, and although the nature of the affections and their prognosis differ *toto cælo*, this *nerve suffering* establishes a clinical relationship between them.

Stokes-Adams Disease. There is, however, a third clinical group in which the lesions usually productive of angina are present, but without any violent paroxysmal pain, in spite of the abiding cardiac dyspnoea and of the presence of the gravest symptoms of cardiac inadequacy which inevitably lead up to a fatal termination. A further distinction between the typical case of paroxysmal angina and this affection is the frequent absence in the former of the peripheral results of loss of compensation, such as failure of the pulse, oedema, and ascites, and their usual presence in the latter, which would seem to be a slower and, perhaps, more general form of myocardial degeneracy capable of advancing to the extreme of cardiac incompetence without being cut short by any sudden catastrophe. This kind of case is sometimes described under the name of Stokes-Adams disease. A typical case, in a male, aged fifty-two years, is related by Petrucci,¹ whose patient suffered from sudden attacks of oppression, constriction at the chest, dimness of vision, syncope, irregular pulse of unusually slow rate (14 per minute, and as a maximum 24 per minute), but there were no physical signs. Fatal syncope occurred a few months later, and much atheroma was found in the carotids and coronary arteries. The heart was pale and presented patches of myocarditis. Petrucci, who has studied the majority of cases reported, finds that some have been attributed to fatty degeneration, others to neurosis or to an affection, nuclear or peripheral, of the vagus. The duration appears to have been sometimes a few weeks only, or to have extended to twelve months. Little has hitherto been achieved by treatment.

But even in this form the nervous symptoms are not quite absent; indeed, they may be shown to occupy a considerable place in the clinical picture. The implication of the nervous system takes place, however, in a different direction. It is the medulla which bears the stress, as is shown by the pulse and by the respiration. The great peculiarity of these cases—one shared by some of the varieties of Heberden's angina which approximate to this type—is the presence and the persistence of Cheyne-Stokes' symptom. Though there may be no murmur, the evidence of cardiac debility is marked in every direction.

The Nervous System in Relation to the Heart. The common nervous factor which forces itself upon our attention throughout the range of the functional and of the organic affections justifies a comprehensive survey of the varied relations of the cardiac nervous system, and particularly of its connections with the psychical, the medullary, the spinal, and the visceral spheres of innervation. This study has been well carried out by Morison² in the Morison Lectures on the "Relation of the Nervous System to Disease and Disorder in the Viscera."

¹ *Gaz. degli Ospedali*, September 11, 1898.

² *Lancet*, December 17, 24 and 31, 1898.

Angina Pectoris and its Congeners. Angina pectoris is not a disease likely to be on the decline nor one in which we can ever cease to take a practical interest. The latest account is that given of it by Sir R. Douglas Powell.¹ The division adopted is: 1. *Angina vasomotoria* or *pseudangina*. 2. *Angina pectoris gravior*, of which two varieties are recognized, the *secondary* cardiac angina and the *primary* cardiac angina, or "syncope anginosa" of Parry, in which the pathological cause of the affection is entirely within the heart-substance. In connection with the latter, Powell dwells upon his previously expressed view, that coronary disease is not the essential pathology of angina pectoris, although in this group it is almost invariably present. As a fact, the more important symptoms of angina are, he contends, frequently met with without any coronary or other cardiac lesions, as, for instance, in the vasomotor angina pectoris; and in many cases where coronary disease exists the anginal attack itself is dependent upon the same vasomotor causes, and these may be remote from the heart. The precise nature of the pain is not understood. A neuralgia of the cardiac plexuses may be an occasional cause, but the origin is most commonly a stretching or compression of the peripheral nerves of the myocardium or of the endocardium, or a cramp affecting a limited area of the cardiac muscle. The irritation of the gray matter of the cardiac ganglia may be just enough to cause localized pain, or it may be so great as to extend to the cord itself. For, as shown by Head and by the work of Allen Sturge, Gaskell, Ross, Dean and Bradford, and Edgeworth, the sensory nerves of the heart are in relation with the spinal cord from the first to the eighth dorsal—viz., the auricle with the fifth to the eighth dorsal, the ventricle with the second to the fifth dorsal, the ascending aorta with the first to the third dorsal, and the third and fourth cervicals.

The second dorsal roots with their intercosto-humeral branch are those most central to the paths of pain from the heart. The pain may sometimes be reflected to the entire sensory supply from the brachial plexus. Head has pointed out definite areas of tenderness—the precordial, the dorsal, and the supra-orbital. The supra-orbital pains are described by Head as constant in angina, though difficult to explain; they have not been noticed by Sir R. Douglas Powell. In diagnosing the vasomotor from the primary form of severe angina, attention to the following points is needed: (1) A high and especially a variable degree of blood-pressure in the intervals and a tightened radial artery during the attack. (2) An aortic regurgitant valvular lesion, or an aneurism, or weakness and enlargement of the heart from fatty infiltration, as distinct from fatty degeneration, would be presumptive evidence of the secondary form

¹ Clifford Allbutt's *System of Medicine*, vol. vi.

of angina. (3) Dyspepsia, constipation, present gouty phenomena, or mental emotion would also favor the diagnosis of the vasomotor variety. (4) On the other hand, the absence of the vasomotory phenomena described above would suggest primary cardiac angina. (5) Again, in primary angina the earlier attacks come on during moderate exercise, and increase steadily during exercise, obliging the patient to stop. (6) A large, fibroid heart without any murmurs and with normal blood-pressure also points to it. (7) Regurgitation from the ventricle militates against the mechanism of vasomotory angina. Thus mitral murmur in association with angina favors the diagnosis of a primary cardiac origin. (8) Sudden syncopeal attacks with or without pain and generally fatal are usually due to coronary disease.

The Cardiac Neuroses and Cardiac Neurasthenia. As Theodor Schott¹ points out in his paper on "The Treatment of the Cardiac Neuroses," cardiac neuroses are becoming more frequent, and, therefore, also, the combinations of the neurotic with the organic affections. The cardiac neuroses are divided into three large groups: (1) The sensory neuroses; (2) the motor neuroses; (3) the neurasthenic neuroses or *neurasthenia cordis*. The large section of the sensory neuroses presents three distinct varieties: (*a*) The pseudo-angina or angina pectoris nervosa; (*b*) the vasomotor angina; and (*c*) the angina pectoris vera.

The characteristics of *pseudo-angina* or *nervous angina* are well known—the piercing, shooting, stinging pain occupying various positions in the cardiac area; the feeling of oppression or contraction or tightness at the chest, and the irradiations along other nerves, not only of pain, but of numbness and formication. Unusual irradiations may sometimes mislead observers into suspecting some fictitious nervous diseases. This form of affection is almost limited to young people. Inheritance, chlorosis, anemia, overstrain, syphilis, gout, pleuritic or pericardial adhesions, and lastly poisons, particularly lead and some of the alkaloids, including those of tobacco, which, according to Schott, may even lead to true angina, have all to be considered in the etiology. The *vasomotor form* presents, in addition to the anginal symptoms, those which may be attributed to spasmodic contraction of the vessels, and a reflex element probably enters largely in their production. Intense visceral pain and anxiety and a feeling of impending death distinguish *true angina*. Its usual occurrence is after forty. The onset of the attack is sudden, but may frequently be preceded by an aura a few hours or even days before. The patient has to stop if walking, and remains motionless in various attitudes, and when the attack is over walks on with anxious gait. He fears to breathe; but, as Schott remarks, he can breathe if

¹ Medical Record, March 11, 1899.

urged to do so, except when there is a complication of severe congestion or œdema. All observers will agree with Schott, that during the fit the pulse is *not* normal, but often feeble and rapid, and the cardiac beat is difficult to feel. Schott insists that during the spasm dilatation of the left auricle takes place; that the left ventricle may subsequently become dilated, and that total enlargement of the heart may result.

The *motor cardiac neuroses* take origin variously in muscular or in nervous overstrain; but it may be sometimes difficult to determine whether the peripheral or the central nerves, their extracardiac or their intracardiac distributions, or, lastly, the excito-motor ganglia or the inhibitory nerves, are chiefly concerned. The symptoms are the well-known palpitations, irregularities of rhythm, flutterings, a sensation of the heart being suspended by a string, and various other peculiar sensations of irregular movement.

The *neurasthenic clinical symptoms* may be divided into two stages: the excito-motor stage and the stage of depression. All the causes which lead to general neurasthenia may also produce a neurasthenic state of the heart; but, as Fothergill points out, we must strictly distinguish between the muscular weakness of the heart and the nervous weakness. The importance of this distinction in prognosis is obvious. In the excito-motor stage there may be every form of increase, of decrease, or of irregularity in the rate of the pulse; but its intermittence is very often the central symptom of distress; and the more the attention is fastened upon this the greater the tendency to general and nervous complications. Sleep is disturbed, digestion suffers, various spasms may complicate those due to flatulency, and digestion may be so much disturbed as ultimately to lead to a general malnutrition, with serious aggravation of the nervous factors. Ultimately that type is developed in which all the general symptoms of neurasthenia described by Beard are fully developed.

Nervous Disorders of the Heart. In his presidential address "On the Investigations of Some of the Nervous Disorders of the Heart," at the opening of the 125th session of the Medical Society of London (October 11, 1897), Arthur E. Sansom dwells upon the importance of an inspection of the eyes and eyelids, of the auditory mechanisms, of the nasopharyngeal tract, of the pulse and of the heart-rate, of the muscles in respect to tremor, and of the murmurs, valvular, functional, and cardiopulmonary. He also calls attention to a marked tremor which he has observed in many cases of tachycardia when the patient is directed to close the eyes gently, and to a divided inequality of the pupils, unexplained by organic causes, which disappears with the cessation of the other disorders of function. He adopts Arthur Maudsley's view ("The

Eyelid Symptom in Exophthalmic Goitre¹⁾ "that the group of muscles which are habitually paretic in Graves' disease are the superior facial group (the orbicularis, frontalis, and corrugator supercilii), and that the changes producing the lid symptoms are changes in the oculomotor nuclei, the conduction taking place along the fibres passing down to the seventh trunk by way of the posterior longitudinal bundles."

CARDIAC THERAPEUTICS.

The Heart Tonics. DIGITALIS AND ITS MODE OF ADMINISTRATION. Digitalis preserves its position as the heart tonic *par excellence*. Sir R. Douglas Powell holds that it should be administered steadily rather than in one large initial dose—a method which cannot get the heart under good control, but tends to produce premature arterial contraction and cumulative effects. Should nausea ensue it is best relieved by an occasional mercurial, a change to digitalin, or by an occasional draught of hot water. Sometimes, however, digitalis must be stopped.

Francis H. Williams,² of Boston, believes, with Sir R. Douglas Powell, that large initial doses of digitalis are undesirable, and prefers small doses (℥x every four hours or ℥xv every eight hours).

THE THERAPEUTIC ACTION OF THE SUPRARENAL EXTRACT. J. J. Abel³ has isolated the active principle, epinephrin ($C_{17}H_{15}NO_4$), which resembles alkaloids, and when prepared at a low pressure takes marked effect upon the heart and the blood-pressure.

The action of suprarenal extract upon the heart has also been investigated by George B. Wallace and W. A. Mogt,⁴ with the help of a modified Roy and Adami myocardiograph. The rise in blood-pressure caused by arteriolar contraction in the systemic arteries does not occur in the pulmonary artery. The heart is inhibited by the extract through stimulation of the vagus; but there is also, as perceived when the vagus influence is removed, a direct stimulation of the heart muscle increasing the force and the frequency of its contractions.

The Sedative Treatment. MORPHINE IN CARDIAC DISEASE. A great part of the success of cardiac treatment depends upon rest, and particularly upon sleep. To rest the disabled heart is the first of all indications, and only when this is fulfilled is there any chance for the success of more active measures. Toogood has used with benefit small injections of morphine, or of morphine and atropine combined, and believes that the beneficial action is exerted upon the cardiovascular system,

¹ Edinburgh Medical Journal, August, 1897.

² Boston Medical and Surgical Journal, July 28 and August 4, 1898.

³ Ibid., January 26, 1899; British Medical Journal, March 4, 1899.

⁴ Ibid.

central and local, bringing to an overstrained organ the rest which is essential to its recovery.

Oliver T. Osborn,¹ of New Haven, read at the fifteenth annual meeting of the New York Medical Association a paper on the "Medicinal Treatment of Cardiac Insufficiency," and advocated, in urgent failure, morphine and atropine, with a small dose of nitroglycerin as a hypodermatic injection. When digitalin was indicated, $\frac{1}{100}$ to $\frac{1}{50}$ grain might be used and the patient kept recumbent.

Sansom² testifies to the great efficacy of small hypodermatic injections of morphine (from $\frac{1}{10}$ to $\frac{1}{4}$ grain) in calming and comforting the patient. Allbutt, who introduced this therapeutic plan, says: "By the mouth opium is behind other sedatives in value, its use being attended by grave drawbacks; but morphine hypodermatically, in doses gradually ascending to $\frac{1}{4}$ grain, if necessary, is a precious means of relief. Physicians who still protest against its use are unfamiliar with the practice."

THE TREATMENT OF PALPITATION. Huchard³ points out that "Since it is true that there is no part of the body which may not be the cause of cardiac palpitation, it is necessary to investigate all possible causes before attributing a lesion to the heart. Of these lesions, which are accompanied by palpitation (acute aortitis at its commencement, acute endocarditis and pericarditis, pericardial adhesions, obstruction or insufficiency at the mitral valve), the symptoms of cardiac crethism are benefited by a pill containing $1\frac{1}{2}$ grains of quinine hydrobromate and $\frac{1}{4}$ grain each of powdered digitalin and of extract of convallaria, to be taken twice to four times daily."

Cardiac palpitation, due to various causes, is, in Kinnear's experience, easily controlled in the majority of cases by the application of cold to the dorsal spine. The application may in some cases have to be repeated once or twice a day for forty minutes. The same cases are also benefited by oxygen inhalations.

The Diuretic Treatment and the Toxæmic Delirium of Heart Disease. Eichhorst strongly recommends the combination of diuretin with digitalis in cases where simple recumbency is not sufficient to restore compensation. A course of thirty powders of digitalis leaves (10 centigrammes) and diuretin (1 gramme), after meals, three times a day, will almost always cure the œdema.⁴

The well-known delirium of heart disease—apathetic, somnolent, mumbling, or even shouting, with small pupils and hurried breathing, which often coincides with the diuretic action of digitalis and diuretin

¹ Medical Record, October 22, 1898.

² Lancet, December 19, 1898.

³ Revue Gen. de Clin. et de Therap.; Medical Record, October 1, 1898.

⁴ La Semaine Medicale, June 29; and Journal American Medical Association, August 20, 1898.

—Eichhorst¹ seeks to explain as a result of the reabsorption into the blood of toxic substances stowed away in the cedematous tissues. This complication is not dangerous, and is quite transitory.

The explanation suggested by Eichhorst is plausible, and may be the right one. Hitherto its occurrence had been rather connected with the mechanically disturbed cerebral circulation. The toxæmic view seems to solve the problem even better than a hypothesis based upon the relatively coarse mechanisms of altered vascular fulness and tension.

The Balnear Treatment and the Treatment by Exercise. Peabody's² paper on Nauheim is of value as the outcome of personal acquaintance, gained during an adequate residence, with the heart affections suited to this form of treatment. His sentiment will be heartily echoed—viz., "It is of small moment what may take place in the dimensions of the heart temporarily as the immediate effect of a therapeutic procedure, if the patient does not improve as a remote consequence of it all." And the converse is also true.

Charles L. Greene,³ after an experience of nearly one hundred cases treated by baths and resistance-movements, states that the most favorable cases are those of mitral regurgitation, even when much advanced or uncomplicated, provided there be no arterio-sclerosis or myocarditis. Aortic valvular stenosis or insufficiency is best treated by simple rest and resistance-movements. In aneurism, marked arterio-sclerosis, chronic myocarditis, and chronic Bright's disease the baths are dangerous and harmful, though the movements may be beneficial. Exophthalmic goitre, functional irregularity, neurasthenia, anaemia, and chronic rheumatism are distinctly benefited.

The *direct effects* of a bath are: (1) A transient oppression, rarely amounting to dyspnoea, followed by exhilaration and comfort; (2) a slowing and strengthening of the pulse-beat; (3) a brightening of the skin, nails, and mucous membranes when previously cyanosed, showing increased capillary circulation; (4) a secondary reduction of the pulse-tension without secondary acceleration; (5) a great reduction in the area of cardiac dulness, most marked primarily on the right side. The effects of the movements are almost the same, but are not so long maintained. The shrinkage of the heart during the bath is not merely apparent, as suggested by those who regard the reduction of the dulness as due to the increased depth of respiration.

After all had been said, as we thought, concerning the value and the *rationale* of the Nauheim treatment, original views, such as those put

¹ Deutsche med. Wochenschrift, June 23, 1898.

² Medical Record, November 19, 1898.

³ Journal American Medical Association, October 15, 1898.

forth by Albert Abrams,¹ are a welcome surprise. He admits, on the showing of the fluoroscope, the reality of the reduction in the volume of the heart and its relatively lasting character. Another effect of the treatment is to dilate the lungs, and thus to diminish the superficial cardiac dulness. An explanation is thus needed for two associated results of the Nauheim treatment: (1) Acute dilatation of the lung and (2) rapid reduction of the size of the heart. Abrams endeavors to prove that they are both dependent upon the same cause—*cutaneous irritation*. Resistance-movements may indirectly influence the heart, but the sensory nerves of the skin have much to say to the effect. Friction by means of a wire brush will accomplish almost as much as the Nauheim treatment, while it is a simpler, more expeditious, and less expensive method.

THE NAUHEIM TREATMENT IN CARDIAC NEUROSES. This is dealt with by Theodor Schott in the *Medical Record* (March 11, 1899). All cases of true angina pectoris with advanced coronary or general arteriosclerosis have to be excluded; but all other cardiac neuroses are benefited, and part of the benefit is doubtless due to the strengthening of the nervous system in general.

The exercises properly administered have analogous beneficial effects, and Schott continues to be a believer in the administration of the treatment by trained assistants rather than by means of mechanical appliances.

Abdominal massage in heart disease is favorably spoken of by Huchard² as assisting the heart in the same direction as digitalis. He thinks, with Cantrui, that it tends to regulate the blood-pressure and to relieve the venous congestion of the viscera, and in this way to promote diuresis.

The Dietary of Heart Disease is a subject the importance of which it would be difficult to overrate. Its practical aspects are presented to us by Robert H. Babcock³ with analytical thoroughness. How to carry out the essential indication of feeding an overtaxed heart without oppressing the enfeebled functions is a dilemma which becomes absolutely perplexing in two sets of cases—those with complicating nephritis, where nitrogenous food has to be avoided, and those with advanced arteriosclerosis. Babcock holds that the complication of nephritis is an indication for a milk diet, and that of arterio-sclerosis for the avoidance of the salts of calcium. I believe that in the latter the worst risk is in imperfect nutrition of the tissues through an impaired arterial system, and that the need for frequent and light supplies must precede all other considerations.

¹ Medical News, January 7, 1899.

² La Semaine Medicale, July 13, 1898; British Medical Journal, February 25, 1899.

³ Journal American Medical Association, December 17, 1898.



DISEASES OF THE SKIN.

BY HENRY W. STELWAGON, M.D.

DISORDERS OF SECRETION.

Hyperidrosis. In excessive sweating of the palms and axillæ, Unna¹ speaks well of an ointment consisting of two to four drachms of the commercial solution of formol to the ounce of vaseline or lanolin. The odor is abolished and the hyperidrosis materially diminished, but, as the writer truthfully remarks, radical cures are rare.

For foot-sweating Gerdeck² brushes over the parts three times, at about eight-hour intervals, formalin solution of varying strength, depending upon the tolerance of the skin; full strength, if well borne. For this purpose it takes fifteen to twenty drops. Four or five drops should also be placed in the shoes. He claims that while the results are not usually lasting, the odor disappears, and relief for three or four weeks ensues; the applications can then be renewed.

Chromidrosis. Under the title of "Seborrhœa Nigricans; an Unusual Hysterical Disorder," J. K. Mitchell³ describes an exceptional case in a woman, aged twenty-five years, of dark, dirty, oily-looking discoloration of the eyelids and immediately neighboring skin. The discoloration was bluish-black, and always more marked on the lower lids than on the upper. It was noted that temperature extremes increased it, and the degree of discoloration was variable within moderate limits; its intensity was sometimes increased after an unusually painful menstrual period. Excitement and exercise seemed to have little influence upon it. On attempting to wipe it off it gives to the cloth used in wiping it a look of smuttiness, as if fine lead-pencil dust were upon it. It can be washed off if some force is used and pretty hard scrubbing, but it is renewed in a few hours. After washing in this way the skin is found somewhat sensitive and a little flushed, but this seemed to be the result of the rubbing. The matter removed was found to be insoluble in ether and soluble in acids, showing that it was not a "fatty exudate," as Naligan had supposed. This condition was observed first five years previously, after the occurrence of circumstances having a depressing influence.

¹ La Semaine Medicale, February 23, 1898.

² La Riforma Medica, 1898, No. 38.

³ Philadelphia Medical Journal, January 15, 1898.

which engendered poor health and hysterical symptoms, the affected area becoming gradually darker and more extensive. Urine and blood examinations revealed no abnormality.

The case was under observation some months, and it was found that the manifestation was not artificial. Microscopical and bacteriological examinations of the matters from the discolored area failed to throw any light on the condition.

FIG. 1.



Chromidrosis. (J. K. MITCHELL.)

Mitchell reviews the various similar cases recorded, but very little actual information as to the true nature of the affection is obtainable; patients are of a neurotic type, the subjects being almost always women. In every case there is a preceding history either of profound depression or nervous disturbance; in a number of cases the history is that of an affection distinctly hysterical in character. Mitchell states that in almost every instance in the reported cases, when the habitat is mentioned, the place of residence was near the sea, and that De Méricourt, quoted by him, thinks that some causal relation may exist between this seaboard situation and the diseased state. This relationship is more likely to be, however, coincidental, I think, than to be of etiological bearing.

Seborrhœa. The treatment of seborrhœa of the scalp has always had as its basis mild stimulation. The past years, however, have seen this disease ascribed to parasitism by some observers, and elaborate procedures having in view the impossible escape of a single microbe have been advanced, especially by Lassar. It is difficult to find patients suffi-

ciently amiable and docile, however, to carry out tedious details. Bayer endeavors to lessen the difficulties of Lassar's plan. He directs the scalp to be daily washed for ten minutes with a tarry soap, and then rinsed; a 0.5 per cent. lotion of corrosive sublimate is then applied and the scalp dried, after which an ointment of naphthol, 5 per cent., is to be rubbed in and the excess wiped off. Later the treatment need be carried out but once or twice weekly.

While this method is somewhat less elaborate than that advised by Lassar, it is still a troublesome one. I have not yet been able to convince myself that these methods are superior in result to that of the single daily application and occasional shampoo.

INFLAMMATIONS.

Erythema Multiforme and Erythema Nodosum. The general symptomatology of this disease, with the multiform cutaneous manifestations and the not infrequent joint involvement, is fairly well defined. The eruption in a given case, as a rule, presents a predominance of one type of lesion. In many cases, however, all types of lesion, as its name signifies, are to be seen, as in the case of a young woman of eighteen years, reported by Schein² before the Hungarian Dermatological Society, in which the cutaneous disturbance was made up of erythematous patches, papules, blebs, and nodes. Greig's³ case is somewhat similar, consisting of erythematous and erythematobullous lesions.

While certain regions, as is well known, are favored by this eruption, all parts of the integument may be attacked, as in the case just referred to, and also in those reported by Payne,⁴ Darier, and Sottas.⁵

In rare instances not only does the eruption invade the general integument, but also the lips, the mucous membrane of the mouth, and, exceptionally, even the inside of the nose, the conjunctiva, and sclerotic. In some cases the mucous membranes of the mouth and lips bear the chief brunt, as, for instance, in Turner's⁶ case. The lesions first made their appearance on these parts, appearing as abrasions or white spots, and some days later there occurred an eruption of blisters in the mouth and about the hands, wrists, and below the knees. A few of the integumentary lesions showed a tendency to concentric formation. In discussing this, case Pringle⁷ remarked that he had met with several cases of this disease in which the mouth shared in the eruption, and which pro-

¹ Gazette Hebdom. de Médecine et de Chirurgie, January 28, 1898.

² Monatshefte für praktische Dermatologie, April 15, 1899.

³ Scottish Medical and Surgical Journal, July, 1898.

⁴ British Journal of Dermatology, May, 1898.

⁵ Annales de Dermatologie et de Syphiligraphie, February, 1898.

⁶ British Journal of Dermatology, November, 1898, and January, 1899.

⁷ British Journal of Dermatology, November, 1898, and January, 1899.

ceeded that on the skin by a somewhat unusually prolonged interval. In Crocker's¹ patient, also, the mouth was badly affected, and this part was the first to be involved; the lips were covered with blood crusts, and the inside of the lips and the tongue were superficially ulcerated. In this case, moreover, the mucous membrane of the nose was also the seat of lesions. These cases, unfortunately, are usually the most troublesome. Pelon² and Schein³ report cases in which the lesions, small nodes, were also seated upon the conjunctiva and sclerotica.

In not a few instances of limited eruption the disease shows a rather unusual localization. Colcott Fox⁴ exhibited before the London Dermatological Society a man, aged sixty-eight years, in whom there was an eruption of large elevated erythematous papules, developing into rings, with the margins studded with herpetic vesicles, seated upon the central part of the forearm on both aspects. The individual lesions ran an active course, but from constant succession and confluence of lesions on this same region the skin had become thickened and pigmented; these latter are also unusual features in this disease. In Bronson's⁵ case the later recurrence had been almost entirely confined to the face and forehead. Even in generalized cases the favorite site for the eruption—back of the hands—may be spared, especially in the earlier stage of the outbreak, as shown in the case reported by Darier and Sottas.⁶

The frequency of the occurrence of blebs in erythema multiforme, when present in profusion, constituting the so-called erythema bullosum, is shown by the various cases to which reference has already been made. In most cases of the disease, however, the bleb formation is not observed, and it rarely, if ever, is the sole lesion present. It is common experience that in most cases of this disease a single type of lesion predominates, and not infrequently is the only manifestation to be seen. Payne's⁷ case and Bronson's⁸ case are good illustrations of this, in both of which the symptoms were more or less generalized, and yet wholly of the erythematous type, and gyrate in character, in Bronson's case resembling scroll-work.

It is now generally admitted that erythema nodosum is simply a variety of erythema multiforme, and cases are multiplying in which mixed lesions are present. The cases reported by Gibb,⁹ Glück,¹⁰ and Schein¹¹ during the year are additional proofs.

¹ British Journal of Dermatology, February, 1899.

² La Presse Médicale, 1898, No. 75.

³ Loc. cit.

⁴ British Journal of Dermatology, June, 1898.

⁵ Journal of Cutaneous and Genito-Urinary Diseases, September, 1898.

⁶ Loc. cit.

⁷ Loc. cit.

⁸ Ibid., May, 1899.

⁹ Lancet, April 23, 1898.

¹⁰ Mittheilungen aus der Bosnisch-Herzegowinischen Landes-spital in Serajewo. Wien, Josef Safar, 1898; Monatshefte für praktische Dermatologie, vol. xxvii., No. 9, 1898.

¹¹ Loc. cit.

The causes of the disease are as yet not clearly recognized. Certain articles of food, possibly having undergone some deterioration and giving rise to toxins, are often seemingly responsible. Such appeared to be so in the case reported by Darier and Sottas, the outbreak following the eating of codfish; and in Turner's case, following indulgence in oysters. In Glück's cases (five) the eruption developed during the active stage of syphilis, and this writer was inclined to look upon the syphilitic virus as the provoking agent, a view, I think, scarcely justified. Without intending to question the carefulness of Glück's observations, my own experience could show a few cases of intercurrent erythema multiforme, or a simulation of it, in which the eruption was due to a drug being given. In other cases some impression made upon the nervous system may be of etiological import, as indicated in one of Bronson's¹ cases. The patient, a female art student, was exposed in a cold storm, which was followed by inflammatory rheumatism and subsequently a prolonged attack of chorea. During this latter the eruption presented, and had been recurring at short intervals for several years. In Gibb's case the eruption followed exposure to cold.

It has generally been believed that erythema multiforme is a disease that runs its course in a few weeks to several months, but this view must be modified if several of the cases—notably those reported by Colcott Fox and Payne, and possibly those by Turner and Bronson, all of whom are competent observers—are to be accepted as examples. In these several instances the disease had persisted continuously or by rapid recurrences for four or five months to several years, and was still active when reported. It is possible, as several of these gentlemen suggest, that their cases may be examples of dermatitis herpetiformis, a view with which my own observations would agree.

PATHOLOGY. Pardee² is the only contributor during the year to add to our knowledge of the histopathology, and it concerned the bullous type (of the herpes iris variety) of erythema multiforme. The study, illustrated with photographs and drawings, is based on two cases—a mild form of short duration and a severe case of protracted course. The contents of the vesicles and blebs showed both mononuclear and polynuclear leucocytes, fibrinous strands, occasionally detached epithelial cells, coagulated serum, and in one case—the severe one—considerable nuclear detritus. There were no hemorrhages or hemorrhagic infarcts, nor were the glandular structures affected. The lesions (vesicles and blebs) resulted from a lifting up of the entire epidermis. He believes the whole process to be an acute exudative inflammation of the upper half of the corium, with dilatation of the superficial network of bloodvessels, and to a slight

¹ Journal of Cutaneous and Genito-Urinary Diseases, September, 1898.

² Bulletin of the Johns Hopkins Hospital, July, 1898.

extent the lymphatics also, and with considerable migration of the polynuclear leucocytes from the capillaries of the papillae, the leucocytes in the severe case undergoing rapid disintegration.

TREATMENT. In the contributions of the year very little is said about treatment. Payne¹ reports great benefit in his case from sea-bathing and large doses of quinine—eighteen grains daily. Pelon,² after trying several remedies (salicylates), also attributes a good result to quinine. Greig³ confirms the above opinion as to this drug, his case improving rapidly as soon as quinine, iron, and sulphuric acid were given. Quinine is in the class of antiseptics, a class which is usually employed in this disease, and which, in my experience, is the most valuable. Up to within recent years the effect of drugs on the course of this affection—heretofore usually considered self-limited—has been questioned, but if we are to meet with chronic cases there will be opportunities of testing the value of various preparations.

Urticaria. In so common an affection as urticaria one has frequent opportunities of observing its ordinary features and its more frequent deviations. In my own experience the cases described by Madison Taylor, Hinsdale, Lederman, and Freudenthal, in which the throat was the seat of more or less extensive urticarial swellings, are unusual, and for the time at least alarming. In Taylor's⁴ case, a young woman was seized, on attempting to sing, with a feeling of increasing suffocation and swelling of the glottis, attended with profound prostration, dyspnoea, and cyanosis. There had been no preliminary cutaneous disturbance; some minutes afterward, however, there was an outbreak of the ordinary urticarial wheals over the entire surface, with burning and itching. The alarming laryngeal symptoms presented for several hours and then abated. The cutaneous lesions recurred for several days. On two former occasions this patient had had sudden and severe attacks of the eruption, but the throat had not shared in the disease. In Hinsdale's⁵ case, a male, aged twenty-five years, there was a pronounced urticaria, with marked involvement of the uvula, symptoms of asphyxia presenting, with labored breathing and huskiness of the voice. The nose and eyelids were also puffy. The uvula was oedematous, but the process apparently did not involve the epiglottis or larynx.

Lederman's⁶ patient, a male of thirty-eight years, presented similar symptoms, the soft palate and uvula being oedematous and the faucial space almost obliterated; the integument was the seat of large wheals.

In the instance reported by Freudenthal,⁷ the case was somewhat sim-

¹ Loc. cit.

² Loc. cit.

³ Loc. cit.

⁴ Philadelphia Medical Journal, April 2, 1898.

⁵ Philadelphia Polyclinic, July 30, 1898.

⁶ The Laryngoscope, September, 1898.

⁷ New York Medical Journal, December 31, 1898.

ilar, except that the urticaria was recurrent and the laryngeal epiglottis involved; the condition of the larynx persisted during the attacks.

Another case, in a female aged thirty-three years, similar as regards the involvement of the pharyngeal and nasal mucous membrane, is that recited by Chittenden,¹ in which there was also recurrent hæmatemesis. There was no disturbance of the menstrual function, although somewhat profuse. In this instance the first attacks were integumentary and of the usual clinical variety. Later not only was the skin the seat of the lesions, but the attacks involved the lips, tongue, and nasal mucous membrane, accompanied with marked swelling of these parts and troublesome dyspnoea and attacks of fainting, these alarming symptoms lasting a few hours, the attacks themselves persisting about a week. In several subsequent similar outbreaks the patient was seized with nausea, and vomited large quantities of blood and coffee-ground fluid, the urticaria totally disappearing a day or two later. Several weeks' freedom now intervened, when the disease recurred with all its former severity. It continued for a month or more, and ended again a few days after an attack of nausea and bloody vomiting. The throat and tongue complications were not so severe. A few months later it reappeared in a somewhat milder form, and the patient since has never been entirely free from it. There has been no hæmatemesis, but melæna is present. As the writer states, this case is similar to that described some years ago by Pringle,² and attributed by him to "hemorrhage from the stomach due to capillary rupture occurring when the mucous membrane of that organ was in a state analogous to the urticarial condition of the skin."

Chittenden believes that this periodic blood disturbance is due to some toxin, probably autogenetic, circulating in the blood.

ETIOLOGY. It is difficult to recognize the etiological factor or factors in many cases of urticaria; in some instances an unusual or indigestible article of food, or the development of an intestinal toxin, etc., may be the responsible factor. In other cases a slight external irritant or the bite of an insect is seemingly sufficient to provoke the urticarial eruption. In Lederman's case, for instance, it was thought possible that the exciting factor was a jelly-fish striking against the patient while taking a sea-bath. Interesting, too, from an etiological stand-point, showing that the eruption is also often of an essentially reflex nature, is the case reported by Oliver,³ in which the disease was seemingly due to eye-strain. This patient, a woman aged forty-seven years, had been the subject of persistent and recurrent urticaria for a number of years. Experiencing diminishing sight, especially at short distances, she was suitably fitted

¹ British Journal of Dermatology, 1898, No. 5.

² London Clinical Society Transactions, 1885, vol. xviii.

³ Philadelphia Medical Journal, January 11, 1899.

with glasses, and in the course of a few days the tendency to the urticarial eruption had wholly disappeared. If the glasses were not worn constantly, or upon leaving them off for a half-hour or so, hives would make their appearance, to disappear again shortly after the use of the glasses was resumed. Some years later the hives began to return, and continued for a year or more. An examination of vision showed the necessity of a change in the lenses. The same result followed after a few days, the urticarial outbreaks completely subsiding. On one occasion, in getting a new pair of glasses, a mistake was made in the right glass, with the result that in a day or two she again became covered with wheals; when the mistake was discovered and corrected the tendency, after two or three days, again disappeared.

TREATMENT. Nothing new in the way of treatment has been advanced during the past year. In the management of the throat cases referred to, Taylor¹ attributed abatement of the alarming symptoms to the measures employed: counter-irritation to the extremities, ice to the neck, and a spray of cocaine and antipyrin to the throat; hypodermics of strychnine, atropine, and later pilocarpine, were also given. Hinsdale² relieved his case with cocaine applications and Seiler's solution in spray, with rhubarb and soda internally. Chittenden³ tried large doses of calcium chloride—a remedy strongly advised recently for obstinate cases of urticaria—but the result was disappointing, an observation, I may add, concerning this drug, similar to my own. Chittenden found the most relief obtained from change of air, absolute rest, and freedom from worry.

Urticaria Pigmentosa. Several cases of the condition described under this name have been recorded during the year. A few of the cases presented some peculiar feature or history. Up to within recent years it was thought that the malady always had its beginning in the first years of life. Colecott Fox⁴ adds a case to the very few exceptions to this rule. In his patient, a youth of eighteen years, the disease did not present itself till he had reached his fifteenth year. As in almost all these cases, there were some ordinary wheals present, and some degree of factitious urticaria could be excited.

In Hallopeau's⁵ case, which he presented before the French Dermatological Society, vesicopustulation occurred in some of the lesions and left scars. He referred to two other cases which he had exhibited before the Society several years before, in which a cicatricial tendency had also been shown in some of the lesions, but without preceding vesicopustulation.

¹ Loc. cit.

² Loc. cit.

³ Loc. cit.

⁴ British Journal of Dermatology, November, 1898.

⁵ Bulletin de la Société Française de Dermatologie et Syphilographie, June, 1898.

There is nothing very remarkable in my own cases¹ except the profusion of the eruption. In one case, however, there was slight tendency to vesicular capping in some of the lesions, and in some, after disappearing, the epiderm appeared slightly wrinkled, slightly sieve-like, giving an appearance faintly similar to the slight atrophy which follows lupus erythematosus.

FIG. 2.



Urticaria pigmentosa. (STELWAGON.)

ETIOLOGY. The proper status of urticaria pigmentosa is not yet definitely determined; the majority of observers hold to the view that it is entirely distinct from urticaria. The impression made by my own cases was that the disease is, in its beginning at least, essentially an urticaria, and that the subsequent peculiarities are due to some secondary changes in the lesions.

¹ Journal of Cutaneous and Genito-Urinary Diseases, December, 1898.

Dermatitis Medicamentosa. ANTIFEBRIN was given by Ballou¹ in a malarial case for intense headache. This was relieved, but was soon followed by a peculiar sense of warmth under the skin, and shortly afterward by intense itching, especially intense in the external ear, and this was followed by a general erythematous hyperemic rash, disappearing on pressure, covering all parts, including the palms and soles. The conjunctivæ were also invaded. The malarial temperature was falling, but the skin seemed hot. There was no noticeable heart depression at first, but six hours later, when the rash had almost disappeared, heart action became irregular and weak, and this continued for several days. The peculiar sense of warmth referred to continued for three-quarters of an hour after the eruption itself had disappeared.

ANTIPYRIN, it is known, is responsible for some cutaneous eruptions, especially various manifestations similar to those of erythema multiforme. Wechselmann² records five cases, in one of which the outbreak seemed due to the retention of the drug; it was found absent from the urine after its administration. The eruptive situations were the mouth, anus, eyelids, genitals, and particularly the hands and toes.

BORIC ACID. This drug seems such a mild one that some question is made in regard to deleterious effects from its use. Wild³ reports a case in a man to whom was given ten grains three times daily for a bladder affection. After taking it for a period of six weeks his hair began to fall out and the scalp became red and scaly. The hands and forearms also became reddened, were slightly swollen, and presented scaly patches on the flexor surfaces. These conditions all subsided when the drug was discontinued and simple local treatment applied. Later the boric acid was resumed and the eruption again appeared in a more aggravated form. There were great swelling and considerable desquamation, and hair over the entire surface was involved. Recovery again took place on discontinuing the drug, the hair growing in again. Wild refers also to another similar case in which boric acid and borax were given for epileptic fits.

A somewhat similar case in a male adult, of milder type, however, is recorded by Evans.⁴ The dose of the drug was ten to twenty grains three times daily, and it was administered for three weeks. The skin of the neck, face, and scalp became erythematous and scaly, and later there was falling of the hair of the face and scalp, and complete baldness ensued. The symptoms subsided after the remedy was discontinued, and eventually the hair grew in again.

¹ Medical News, June 18, 1898.

² Deutsche med. Wochenschrift, May, 1898.

³ Lancet, January 7, 1889; Edinburgh Medical and Surgical Journal, March, 1899.

⁴ British Medical Journal, January 28, 1899.

EXALGIN, as with similar drugs, may provoke a cutaneous response, although, according to Linossier,¹ its use is singularly free from such manifestations. In the case referred to by him, too, the patient was evidently sensitive to this class of preparations, as the exalgin was given because antipyrin when administered produced a general erythema. The eruption produced by the exalgin—four grains—was similar to the severe type of erythema multiforme, with papular areas of brilliant red hue over the body. About the hands there was a tendency for the lesion to be ecchymotic; later vesiculation and small bleb-formation were noted. The gums also showed erythematous patches, and there was a burning pain in the alimentary canal. The eruption subsided after several days.

POTASSIUM IODIDE. This provokes various forms of cutaneous outbreaks, the acne-like eruption being the most common. Jacquet² records a case of zoster apparently due to this drug. The drug was administered for four days, thirty grains daily, at the end of which time an ophthalmic zoster developed, associated with neuralgia of the right facial nerve. An exceptional manifestation of this kind must naturally be looked upon with some suspicion until confirmed by other observations. It seems probable, however, that the drug was the etiological factor in this instance, as experience had shown this patient to be susceptible to nervous manifestations from it. Two years previously it had, in the same dosage, produced a left facial paralysis of six weeks' duration, and two years subsequently its administration seemed to give rise to severe dorso-lumbar pains.

Potassium iodide, in addition to various other severe cutaneous disturbances, may, according to Audry,³ produce disseminated gangrene, a case of which he reports. Audry makes the suggestive comment that it may be possible that some of the similar eruptions exceptionally observed in hysterical patients may have like origin, from ingestion not only of iodides but of bromides and similar drugs.

THALLIUM ACETATE. This remedy has been employed recently in the sweating of phthisis, and while in moderate doses apparently effective and safe, it has, according to Huehard,⁴ the rather disagreeable property of producing alopecia of the scalp, and sometimes with startling rapidity. This writer confirms its favorable action in sweating, but his observation shows that in some cases extensive shedding of the hair follows a few doses.

¹ Bulletin generale de Therapeutique, 1898, 13e liv.; La Presse Medicale, 1898, No. 25.

² Annales de Dermatologie et de Syphiliographie, 1898, Nos. 7 and 8.

³ Journal des Maladies Cutanees et Syphilitiques, February, 1898.

⁴ Bulletin de Academie de Médecine, March 17, 1898, and Journal de Médecine de Paris, October 16, 1898.

ANTITOXIN ERUPTIONS. Berg¹ contributes to this interesting subject. These eruptions may be local or general, may appear shortly after the administration of the antitoxin, or some time may elapse before the outbreak. They admit of a clinical grouping: (1) Those resembling simple erythema; (2) those resembling scarlatiniform erythema (*a*) without desquamation, (*b*) with desquamation; (3) those resembling morbilliform erythema (*a*) without desquamation, (*b*) with desquamation; (4) those resembling erythema multiforme. This last furnishes the largest number of cases. There may be prodromic symptoms, but, as a rule, the outbreak is sudden, with a sharp temperature elevation. In those cases of the first and third groups there is generally less febrile action. The duration of the rash is variable, usually but a few days. There is no hemorrhage into the skin, all the rashes disappearing under pressure.

It is probable that the action of antitoxin in producing the eruption is, as Berg suggests, as follows: First, by a direct irritating effect upon the vasomotor nerves and bloodvessels at the site of the injections, thus producing local congestion and dilatation of the bloodvessels; second, by affecting the vasomotor centres in an irritative manner, so as to cause a general cutaneous eruption; and, third, by exercising a direct irritant and paralytic action upon the peripheral capillaries when excreted by the capillaries and sweat-glands. This last, Berg believes, is probably the most common.

Antitoxic serum consists of horse serum charged with diphtheria antitoxin, and this last apparently is not the active nor at least the essential agent in provoking these rashes. It is proved that pure horse serum alone will produce eruptions frequently, but less frequently when filtered. In order to diminish the eruption-producing action of antitoxic serum, it is, therefore, advised that the horse serum constituent should be filtered through the finest Chamberland filter, and of this the smallest quantity possible should be employed.

Eczema. This frequent and troublesome disease comes in for a share of attention during the year. I need hardly say that the trend of opinion is leaning toward viewing eczema, or at least some forms of it, as of parasitic nature. Morris² remarks that it may be regarded as probable that eczema is a parasitic disease, but whether due to the *morococcus*, as alleged by Unna, or some other parasite, or a combination of parasites, is as yet an unsettled point. Every observer of experience will, however, admit, Morris adds, that the parasite must have a suitable soil to grow in, as it cannot fasten itself pathologically in a perfectly normal skin.

¹ New York Medical Record, June 18, 1898.

² British Journal of Dermatology, October, 1898.

Lereddo¹ also gives the weight of his investigations in proof of the disease being parasitic, due to the morococci of Unna. He alleges that he has always succeeded in finding these parasites in the vesicles of acute eczema, and also in chronic eczema, although admitting that they are not infrequently found associated with other microbes. With cultures of these cocci he has succeeded, by inoculation, in reproducing the disease. After the disease starts it may spread by auto-inoculation to neighboring or even distant parts of the body. Regarding this latter point, Morris² also says that the fact that the disease, both in the chronic and acute form, is auto-inoculable, and that it may be transferred from one part to another, is an observation with which all practitioners are familiar. This is a rather sweeping statement, and one to which, I feel sure, most American observers would hesitate to subscribe. In the majority of cases of eczema as met with in my own experience the eruption is limited to a part, as, for instance, the hands, face, neck, legs, scrotum, etc., and usually remains so limited.

Regarding the question of auto-inoculability, Barendt³ aptly remarks that many of the cases appealed to as instances of such are really examples of the production of eczema by repeated mechanical irritation, and should not be considered as lending support to the parasitic hypothesis.

Colecott Fox⁴ also, apparently, leans to the belief that the disease is parasitic, although he does not distinctly so state. He has been struck with the large number of cases in both children and adults in which the disease begins on the scalp and face, and then descends, later involving large parts of the whole surface, with certain preferences of localization. This accords with Unna's belief, that the parasite usually has its primary habitat in the scalp or immediate neighborhood. It is possible, as Fox adds, that cases of eczema will gradually be split up as the play of various etiological factors is established. He further states, as regards the systemic origin of the disease, that there seems at times a constitutional state or a particular condition of the tissues which predisposes to the disease. He cites as an example the eczema observed in women working in a laundry, the soda used setting up the disease, but only in one or a few so occupied, and these may remain free for years before the disease develops, indicating that in addition to the external irritants there must first be the development of an underlying predisposing condition.

Almost all the writers named believe, too, that certain conditions of the integument are necessary for a successful implantation or propagation of

¹ *L'Eczema, maladie parasitaire*, Paris, 1898. Masson et al.; *Monatsh. für praktische Dermatologie*, August 1, 1898.

² *Loc. cit.*, p. 361.

³ *Ibid.*, pp. 371 and 487, respectively.

⁴ *Ibid.*, pp. 370 and 487.

the parasite, such as a break in the skin, a pre-existing irritation, chemical, medicinal, or traumatic; dryness and harshness of the epidermis, textural changes of advancing years, or anything that changes the trophic condition of the derma. The irritation produced by certain irritating secretions, as diabetic urine, sweat, nasal mucus, etc., may be the contributing factor. Lereddo further believes that gouty and rheumatic diatheses, nervous disturbances, impairment of nutrition, etc., are important factors in the pathogenesis of the disease. Or, as Morris¹ says, "It is a disease the most striking clinical character of which is the infinite variety of lesion by which it displays itself; originating in the action of parasites (?) on a skin the resistance of which has been enfeebled by pre-existing disease or structural abnormality, or by disordered innervation, sometimes made more intractable by gout and other constitutional states, but having no direct relation to the general health."

On the other hand, the view that the morococcus is the cause of the disease is strongly combated by Török,² who states that the lesions which Unna and Lereddo produced by inoculation were not true eczematous lesions, but were impetiginous in character and belong to impetigo; moreover, according to his investigations, the vesicles of eczema only rarely contain the morococcus. Its presence in these lesions and in the scales he does not consider proof that it plays more than a saprophytic rôle.

Galloway³ is also in accord with the view expressed by Török, not believing that a specific coccus, such as the morococcus, has been discovered to act as a specific organism, and if anyone takes the trouble to examine carefully the evidence on which Unna has based his description of his morococcus as the cause of seborrhœic eczema, it would be readily seen how slight it is. In the case which Unna demonstrated before the Hamburg Medical Society, in which he produced what he called his inoculation vesicle from pure cultures of this "white" coccus, the important clinical fact outstanding was that the lesion so produced was not eczema at all but something much more clearly resembling impetigo. From the time of this demonstration, Galloway goes on to say, this coccus had been quoted by Unna and his disciples as the specific organism in his large group of seborrhœic eczema, and yet about the same time Welch, of Johns Hopkins University, published his observations on the bacteriology of the skin, in which he showed that an organism, termed by him the staphylococcus epidermalis albus, was a constant denizen of the skin, where it lived a saprophytic existence, and appeared to pro-

¹ Ibid., p. 364.

² *Annales de Dermatologie et de Syphilographie*, December, 1898.

³ Discussion in Harveian Society of London, *British Medical Journal*, February 25, 1899.

duce no pathogenetic effects. Galloway says, rightly I believe, that there is no sufficient evidence on record to prove that the morococcus is not an organism in the same class, and, on the contrary, there is much to support the view that it, too, is simply a saprophyte. Galloway felt inclined to view eczema as the ordinary inflammatory reaction against many varieties of irritation, among which bacteria probably hold an important place. The seborrhœic type seemed clinically to be of parasitic origin, but as yet it has had no definite bacteriological support.

Again, as Beatty¹ well states, if the morococcus is to be accepted as the essential cause of the disease, then psoriasis, in which Unna has also found these organisms, must belong to eczema, a view that almost all would be reluctant to admit.

It is possible that many cases of eczema may be produced by various parasites, as already intimated, the irritation produced by the presence of such being the active factor. Thus Klamann² describes a case of a more or less general eczematous eruption presenting itself in papular, papulovesicular, and scaly circumscribed areas. A microscopical examination disclosed fungus elements bearing resemblance to both microsporon minutissimum and microsporon furfur, yet having some distinctive characters of its own.

The difficulties in the way of identifying a special parasite for this disease is succinctly stated by Robinson³ in presenting a case of eczema before the New York Dermatological Association. The disease involved both lower extremities, and had commenced on the feet and gradually increased in area by peripheral extension, and which, by the manner of its spread, he believed pointed toward a parasitic cause. He "had, however, found that in eczema it is particularly difficult to identify the special parasite, as there are so many different varieties always present on the skin."

As an occasional cause of eczema may be mentioned the external action of certain chemicals or drugs. It is true many of these cases are examples of simple dermatitis, disappearing soon after withdrawal of the cause, but there are some cases in which the effect is essentially an eczema—often a persistent eczema. Hall⁴ reports a case in point, which resulted from contact with phenylhydrazin hydrochloride. The patient was a chemist, and at first the disease involved the fingers only, disappearing during his vacation. Subsequently the disease became more general, in one instance beginning on the hand after contact with this

¹ British Journal of Dermatology, October, 1898; Journal of Cutaneous and Genito-Urinary Diseases, October, 1898.

² Monatshefte für praktische Dermatologie, October, 1898.

³ Journal of Cutaneous and Genito-Urinary Diseases, November, 1898.

⁴ British Journal of Dermatology, March, 1899.

chemical, and rapidly invading other parts. The attack lasted some time, and presented all the phases of a typical eczema, and had always been so considered. The cause being discovered, the drug was kept out of the laboratory, and during such periods there was no evidence of the disease.

Iodoform is another drug that may not only be responsible for a classic passing dermatitis, but in those eczematously inclined may provoke a rapidly spreading and persistent eczema. Such an instance is reported by Esler.¹

The patient had an injured ankle dressed with iodoform ; the next day an eruption was observed, which under another day's use of the drug spread up to the knee ; the same effects, the man stated, had occurred before in his life, and the same action had been experienced by two other members of his family. In this individual case the result was more of the nature of a dermatitis ; in a number of instances observed by others, and several cases observed by me, a true and obstinate eczema resulted.

It has been shown, I believe, as Colcott Fox and others intimate, that there are essentially many and diverse external causes—chemical, thermic, parasitic, etc.—of the disease, and that to such is added a lessened resisting power of the cutaneous tissue due to some constitutional disturbance. A most admirable and scientific paper bearing on this view is that by Leslie Roberts.² I quote from his conclusions :

“It is not to be expected that we can draw up a catalogue of irritants capable of exciting eczema. Even though our knowledge were exact and deep enough to enable us to do this it would after all be a personal list, for the irritants which suffice in one person might be incompetent to produce eczema in another ; and even in the case of the same irritant, its action, judged in the light of visible results, would be subjected to the modifying influences of age, season, and conditions peculiar to the individual himself.

“No doubt if we possessed exact information in respect to the chemical character and constitution of the epithelial metabolism formed within the cells under the influences of stimulation, and especially if we could isolate these metabolites in sufficient quantity for inoculation, we should have very different ideas of the origin of eczema from those we now so vaguely possess. But beyond the observation detailed above, that stimulated human epithelium produces a proteolytic ferment, nothing is known of these metabolites.

“It has afforded me great assistance to regard all the causes of eczema collectively as *epithelial stimuli*. It is a strictly physiological and scientific term. . . . I regard every case of eczema as an example of

¹ Australian Medical Gazette, November 21, 1898 ; British Journal of Dermatology, February, 1899.

² Ibid., January and February, 1899.

over-stimulated epithelium. In clinical work we judge of the degree of over-stimulation by the amount of plasma-effusion, microscopically by the severity of cell-colliquation, but possibly we could judge more accurately by the determination of the amount and kind of variation in the electro-motive currents of inflamed skin.

"So far as my observations go, I believe that the stimuli leading to eczema seldom, if ever, act singly, but as complexes. Mere sunlight or mechanical irritation, such as the friction of a collar, can hardly in themselves suffice to precipitate, as it were, a true eczema. But if to these or other external stimuli we add the stimulus of over-stimulated nerves, acting for a lengthy period and producing a functional alteration in the epithelia, or, instead of nerve, we may say the depressing stimulus of cyanosis, then the combination of these factors, or these and others of which we are yet ignorant, may suffice to arouse that train of physical and chemical phenomena which we include under the title of eczema. I have no reason to say that the co-operation of an atmospheric stimulant is essential for the precipitation of an eczema, but it is a factor of far too great importance to be overlooked or belittled."

While, therefore, I think it must be conceded that an important, if not essential factor, in cases of the disease, is a local one—chemic, thermic, traumatic, parasitic, etc., in character—yet the evidence is equally strong and practically acknowledged by the several gentlemen quoted, that there is also a predisposing or contributory element acting from within—in itself an "epithelial stimulus." Clinical experience is too strong in substantiation of this to be readily cast aside. As Bulkley¹ writes, many cases of eczema are due to a neurotic basis; the disease is most frequent between the ages of twenty and fifty-five years, during a period of life, in short, when the greatest demand is made upon physical strength and nervous energy. Not infrequently the attacks may be traced directly to neurasthenia, nervous exhaustion, nervous shock; and as reflex nervous causes there may be mentioned teething in infants and similar factors; and, finally, the disease may arise from a functional or organic nerve disorder, as after injuries, amputations, neuralgia, etc.

The close relation of the nervous system is well shown by Eddowes,² who presented a photograph of a case of eczema to illustrate what he called sympathetic eczema. He had treated a chronic, stationary, sharply defined patch of eczema on the right forearm by painting on a strong iodine tincture. The following week an exactly symmetrical patch of the disease appeared on the other forearm. In attempting to explain this remarkable reaction he suggested that the vasomotor system

¹ Journal of the American Medical Association, April 16, 1898.

² Discussion on Eczema in Harveian Medical Society of London, British Medical Journal, February 25, 1899.

like the muscular system of nerves, was so linked together that a sufficient stimulus to the centre would produce a bilateral response.

That eczema is not uncommon, too, in those of arthritic habit or history is often observed, as is discussed by von Wratraszewski¹ and also by Whitfield.² The latter reviewed the evidence in favor of its relation to gout, and concluded that it appeared that gouty persons were more prone to attacks of eczema than others, although, as must also be admitted, there was no evidence to show that eczema was invariably associated with this disease.

It is possibly true, too, as stated by Comby³ in discussing infantile eczema, that in some instances the internal factor is an auto-intoxication due to some gastro-intestinal disturbance.

TREATMENT. Comby's⁴ views as to treatment in infantile eczema may be said to reflect the plan generally practised: the correction of faulty nutrition by proper regulation of diet, etc., and the administration of drugs having an influence on the stomach and intestinal tract, such as sodium bicarbonate, calomel, calcined magnesia, and benzonaphthol; if there is looseness of the bowels, bismuth salicylate. Locally the treatment should be mild and of a sedative and antiseptic character. To the internal remedies, in many of the cases in which constipation is a factor, I would add gray powder, nightly or two or three times weekly, especially if there is a tendency to the development of intestinal toxins.

Allen,⁵ in presenting a paper on the treatment of eczema in infants and children, states what cannot be too often reiterated, and yet which, I know by personal observation, is often overlooked: There are some general principles which underlie the treatment of eczema which remain the same no matter what the etiology may be. In these are to be included superintendence of the clothing, especially that which comes next to the body, with especial reference to the diapers; regulation of the bath and daily washing; regulating the nursing periods, examining the mother's milk as to quality and quantity; the prevention and correction of intestinal derangements on the part of both infant and nursing mother, including constipation in the latter; and the protection of the infant's delicate cutaneous structures from irritations which may arise from various causes, including soap, water, heat, and cold winds. Allen believes, in this respect following Unna's dictum, that the eczemas in children not belonging to the neurotic, impetiginous, and reflex classes are rare that do not present upon the anterior surface of the scalp, in the

¹ Allgemeine medicinische Central-Zeitung, 1898, No. 77; Monatshefte für praktische Dermatologie, March 15, 1899.

² British Medical Journal, January 25, 1899.

³ Médecine Moderne, February 12, 1898.

⁵ New York Medical Journal, April 1, 1899.

⁴ Loc. cit.

region of the fontanelle, evidence of greasy crusts mixed with exfoliated epidermis, and that to secure good and permanent results in the eczema situated on parts lower down it is of the utmost importance that the scalp should be brought back to a healthy state of secretion and kept free from crusts and dirt. This view is now held by a number of ardent followers of Unna's teaching regarding eczema seborrheicum, but it is common experience that a seborrheal condition of the scalp often exists in children without a vestige of eczema on other parts.

For this scalp condition, and for dry, scaly patches elsewhere, Allen has found useful an ointment of seven to fifteen grains of resorcin and thirty to sixty grains of sulphur, made up with one or two drachms of lanolin and sufficient lard to make an ounce. These are Unna's favorite remedies for seborrheic eczema, and bear the test of experience; but so large a proportion of sulphur will often result in irritation, and, therefore, to make it safer, I have usually reduced this ingredient to five to twenty grains in the ounce, and in some cases find it desirable to omit it and use the resorcin alone or with three to ten grains of salicylic acid. In eczema of the ano-genital and groin regions, as well as in erythema intertrigo, Allen has been employing a 3 per cent. aqueous solution of methylene-blue with satisfactory results. He found it somewhat analgesic, antiseptic, and soothing to the irritated, raw, abraded surfaces; it forms a protective coating, and, owing to the discoloration, leaves no doubt as to the time when a new coat of the solution is required; its sole objection is its color. In the seborrheal eczema, with slight dry desquamation and trifling infiltration, the salicylic acid ointment, of the strength above, is recommended by the writer. In the impetiginous form, if the crusts are thick and not readily removed by oil or soft soap, the author uses cataplasms of potato flour with an antiseptic such as carbolic acid or lysol solution. Boric acid I believe to be equally as good as either of these antiseptics, and its use requires practically no care.

In chronic persistent forms, especially in older children, an ointment is recommended by the writer, consisting of 1 part resorcin, 2 parts tar, 10 parts each of prepared zinc carbonate and zinc oxide, 50 parts lanolin and lard sufficient to make 100 parts. In those instances of eczema becoming impetiginous from inoculation of the secretion of *micrococcus*, a weak ammoniated mercury ointment is commended. In the majority of cases Allen believes purely local treatment is required, although advising a general oversight of the patient's health. In my own experience suitable internal treatment, usually directed toward the digestive tract, and in some cases nutritive remedies, such as small doses of cod-liver oil, prove very useful adjuvants if nothing more. As a harmless local application, too, not referred to by either of these writers, boric acid lozenge should be mentioned, usually to be employed conjointly with a mild saline

Arsenical treatment for chronic eczema in infants and young children is strongly urged by Neuberger,¹ who apparently has had much success with it, not only in removing the eczema but in improving the nutrition. The effect is slow. For children over two years he prescribes a mixture of equal parts of Fowler's solution and water; of this he gives for a week or so one drop in milk after the midday meal; in the third and fourth week the dose is gradually increased to three drops, and later to six or seven drops. To children under two years he prescribes two parts Fowler's solution and seven parts water, and begins with the drop dose, and very gradually increases to five drops. After cure the dose is gradually reduced. He has never seen any bad effects. In a few exceptionally obstinate cases of this disease, in infants and young children, under my own care, which have proved rebellious to all other methods, I have finally cautiously administered this remedy, and good results have usually followed. Most cases, however, can be brought to a favorable issue without recourse to so hazardous a drug.

In the constitutional treatment of eczema of neurotic origin, Bulkley² advises the remedies we are all accustomed to prescribe in such conditions, especially arsenic, strychnine, and the phosphates. He extols digitalis for cases of nervous exhaustion, as it serves to strengthen the capillary system and to improve the nutrition of the nerve tissue; in other cases he saw good effects from the quieting influence of aconite. He rightly places emphasis on the damage likely to accrue from the use of narcotics. The local management advised differs in no respect from that usually indicated.

In cases of eczema in arthritic subjects it is the experience of most dermatologists, as advised by Watraszewski,³ that the disease is much benefited by internal remedies directed against that condition; the diet also should receive appropriate attention. In old, run-down arthritic individuals a tonic invigorating treatment is most beneficial.

The X-rays have been called into the treatment of eczema by Mackey,⁴ following Hahn.⁵ His first case was a boy of eleven years, who had repeatedly been under routine treatment for eczema without marked benefit; the affected parts were the legs, arms, and cheeks. The X-rays were first used for ten minutes daily at four inches distance; after a month, this "raying" being repeated almost regularly every day, very marked improvement was noted, the case being about cured. His second case was a girl of thirteen years, who had had eczema as a baby, and whose present

¹ Archiv für Dermatologie und Syphilis, 1899, Band xlvii., Heft 2.

² Loc. cit.

³ British Journal of Dermatology, April, 1889.

⁵ Fortschritte der Röntgen Strahlen, vol. ii.; Monatshefte für praktische Dermatologie, March 15, 1899.

³ Loc. cit.

attack had existed for two years, the disease being seated at the bend of the elbows. The customary remedies failing, the X-rays were used, the application being made almost daily for ten minutes, at a distance of six inches. After sixteen treatments the right arm was practically cured; the left arm was still eczematous. The writer states that the most important practical point is to stop the "raying" if any signs of irritation present. The real influence of this treatment in these cases is open to some question, inasmuch as other remedies were simultaneously employed. Hahn's cases, referred to, were both chronic eczema of the lower leg; cure resulted after a number of applications of the "rays," in one case, however, giving rise to a dermatitis. It seems to me, in view of the cutaneous inflammation occasionally produced by the X-rays when used for other purposes, too much caution cannot be exercised in these experimental trials for the treatment of skin affections—diseases which are ordinarily controlled by less dangerous remedies.

Among the newer preparations employed successfully in eczema Hirschborn's¹ experience with naphtalin may be referred to; he succeeded in curing twenty-six out of twenty-eight cases. It was especially useful in oozing cases of an acute type, the effect being marked, and the parts becoming rapidly dry. Saalfeld² also reports favorably upon it.

Brilliant results are also claimed by Hutschneker³ in three cases of chronic eczema, with a $33\frac{1}{3}$ per cent. hydrargyrum vasogen. In one case the disease was seated upon the penis and scrotum, in another under the mammary glands and on the breast, and in the third case on the ears. The writer states that other treatment had been used without avail, or with only slight and temporary betterment. An application, by gentle rubbing in, was made every two or three days; four or five such applications sufficed to bring about relief.

The treatment of eczema of the palms and of the soles, of the hard, thickened, and fissured type, is extremely difficult, and the result slow in coming. Jamieson⁴ and Leistikow⁵ have both given the methods found most successful in their experience. Jamieson advises, first, softening the parts with starch cataplasms, with which some boric acid is incorporated, repeated every four to six hours; on removal of each the parts are to be rubbed thoroughly dry with a rough but soft dry cloth, which removes the sodden and unhealthy epidermis. In four or five days the palms are noted to be soft, smooth, pliable, and pinkish. The poulticing is now to be discontinued, and an ointment, made up of five to thirty grains of

¹ Wiener med. Wochenschrift, 1898, No. 39.

² Dermatologische Zeitschrift, vol. v., No. 6, 1898.

³ Wiener med. Wochenschrift, 1898, No. 34.

⁴ Edinburgh Medical Journal, January, 1898.

⁵ Deutsche Praxis, 1898, No. 3; Monatshefte für praktische Dermatologie, December, 1898.

oxidized pyrogallol, a half-ounce of lanolin, and two drachms each of oil of almonds and distilled water, is to be thoroughly rubbed in, using it sparingly. In only one case out of six was this method without success. After the cure only the blandest soaps should be used, and for the subsequent cure of the soles of the feet, when the disease has been seated there, he recommends daily friction with a towel and cold water. Jamieson considers that the oxidized pyrogallol has remarkable power in promoting normal keratinization.

Leistikow's method, essentially similar, has first in view the removal of the rhagades by constant application of the zinc-ichthyol salve-mull, which is changed every twenty-four hours. After this is accomplished the porokeratosis is treated with salicylic acid plaster or salve. If complete cure is not effected, then tar, pyrogallol, or chrysarobin is used. After recovery he recommends that the hands should be rubbed at night with a 2 per cent. salicylic acid oil or with salicylic acid vasogen.

In the ordinary chronic eczema of the hands Edlefsen¹ extols the value of a paint made of one part of potassium iodide, four parts of iodine, and forty-eight parts of glycerin. The irritation is almost immediately relieved and the disease soon cured. In obstinate cases the paint is applied at night and boric acid ointment in the morning.

Different forms of eczema have been treated successfully in Pellizzari's clinic, Florence, as reported by Radaeli,² with applications of pieric acid, a method of treatment I have also used, with good results, in a few cases. Radaeli states that the parts are first freed of crusts and then washed with a boric acid solution and dried. The pieric acid is then applied, as a saturated aqueous solution, with pledgets of cotton; a compress wet with the same solution is immediately superimposed, and over this a layer of cotton-wool, while a bandage is employed to keep the dressing in place. The first action of the solution is to cause considerable smarting, which, however, soon subsides; the itching quickly abates, giving place to a feeling of comfort. The dressing is repeated every one or two days. It should not be used over extensive surfaces for fear of absorption.

There is scarcely a variety of eczema met with which gives so much trouble in its successful handling as the hard, thickened, leathery, or sclerotic patches observed, usually, on the leg. Punctate scarification has from time to time been commended in connection with the ordinary therapeutic measures. For this type Lawrence³ speaks highly of the method he has employed successfully in the treatment of keloid—linear scarification, or "mince-meating," and compression. In the case of eczema which he quotes there were two patches, one below the knee, about two

¹ *Therapeutische Monatshefte*, February, 1898.

² *La Settimana Medica*, February 18, 1899.

³ *British Medical Journal*, July 16, 1898.

inches in diameter, and one on the inner aspect of the thigh, five by three inches in size. The areas were infiltrated, hard, leathery, and scaly; pruritus troublesome. He first applied strong salicylic-acid-creosote plaster-mull, and over this a roller bandage. After twenty-four hours this was removed and the sodden epidermis rubbed off. An application of strong solution of cocaine was then made and scarification practised. He used a five-blade scarifier, making several longitudinal incisions and similar cross incisions. Bleeding was encouraged by hot boric acid fomentations; subsequently iodoform was rubbed in, and the parts were then dressed with zinc-glyco-gelatin. Large rubber tubing was then placed over the areas, and compression made by running over these adhesive strips, which were fastened to the adjacent skin; the dressings were removed in three days; relief was immediate. Lawrence says that the blades should not be closer than one-sixteenth of an inch, otherwise pieces of skin are torn away on making the cross incisions.

Lichen Planus. Fordyce¹ reports a case of almost universal lichen planus in a woman, aged sixty years, followed by sudden death. There had been considerable improvement in the cutaneous eruption and death came unexpectedly. The eruption was of rapid development, spreading over the entire surface with acute exacerbations, in two to three months, involving the scalp, face, trunk, and extremities; the palms and soles were not affected. The disease followed mental worry over the death of a daughter, leading to insanity and hard drinking.

At the autopsy acute dilatation of the heart with brown atrophy of the muscle, chronic nephritis with arterio-sclerosis and infarctions, were found. There was nothing in the microscopical appearances of the sections of diseased skin that would lend support to the nervous theory of lichen—the commonly accepted view. It would be more reasonable to suppose we have to do with some poison in the general circulation which, acting on the papillary bloodvessels, determines the phenomena in question. Itching, which is generally so pronounced and distressing, is frequently associated with affections of the epidermis, in which the minute nerve fibrils are presumably subject to irritation.

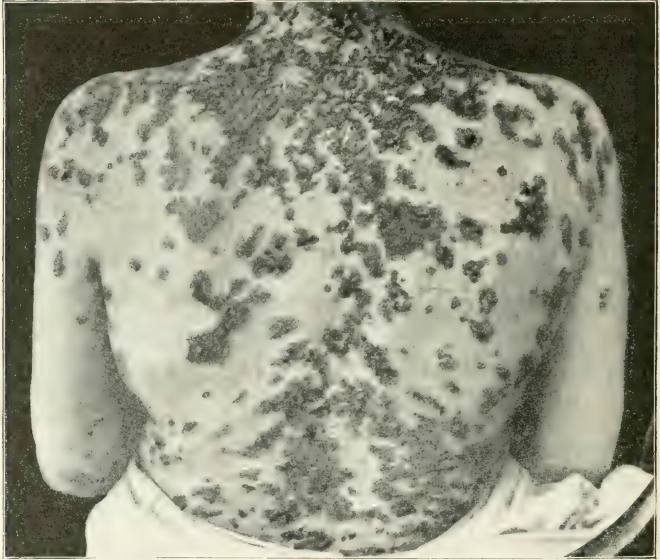
It was noted that each acute outbreak of new lesions on the skin was preceded by an elevation of temperature, headache, and a general feeling of illness, indicating the presence of some poison in the general circulation. It would be justifiable, in view of the autopsy findings, to attribute this constitutional disturbance to the deficient kidney elimination.

TREATMENT. Arsenic has always had credit for usefulness in this disease, and in Fordyce's case this remedy, for a while at least, seemed to have an influence on the eruption. In discussing this case before the

¹ Journal of Cutaneous and Genito-Urinary Diseases, February, 1899.

New York Dermatological Society, Lustgarten¹ stated that in one instance in which the usual remedies had been without avail a prompt effect was produced with three grains of mercury tannate taken daily, although, upon the whole, he regarded arsenic as the most valuable remedy. Schamberg² also calls attention to the value of mercury in this disease. He refers to two cases of somewhat extensive development which yielded rapidly under the administration of a mercurial.

FIG. 3.



Universal lichen planus. (FORDYCE.)

Rona³ reported to the Hungarian Dermatological Society favorable results in the treatment of this disease by external applications alone. In one case he used a 10 per cent. chrysarobin gutta-percha solution, and in another applications of a 10 per cent. alcoholic solution of salicylic acid.

Pityriasis Rosea. The question of communicability of pityriasis rosea has often been considered, but there is very little clinical evidence pointing toward such possibility. The occurrence of the disease in sev-

¹ Ibid., June, 1898.

² Ibid., February, 1899.

³ Archiv für Dermatologie und Syphilis, 1898, vol. xlv., No. 2.

eral members in a family simultaneously or consecutively has never been observed; in a few instances, however, two cases have been noted. Far-
dyce¹ reported another such instance. His observation concerned two
cases of the disease in young girls, aged thirteen and sixteen years, who
occupied the same room. Fox,² in the discussion, remarked that he had
also seen the disease occur at the same time in two members of a family
(in mother and child), but he had regarded it as a mere coincidence.

Psoriasis. In recent years, under the names psoriasis ostreacea, psori-
asis rupiodes, several cases have been described in which, in many of the
plaques, the scales are heaped up, oyster-shell like or rupial in appear-
ance, and quite massive. Waelsch³ and Deutsch⁴ each report an addi-
tional case. The scales partook somewhat of the nature of crusts, and
were usually darker colored than is commonly observed in psoriasis.
In both patients there was more or less cachexia. In Deutsch's case
there was an associated arthritis, and in that recorded by Waelsch in a
few of the heaped-up plaques there was noted underlying serous exu-
dation, which soaked upward through the scaly crusts. It is hard to
reconcile these latter lesions with the dictum that "psoriasis is always
dry."

The association of arthritic affection has been noted, as in Deutsch's
case. Strauss⁵ adds a contribution to this subject. He reports a case in
point, and observes that it is common in psoriasis for the rheumatic
manifestations to begin in the joints of the fingers and toes, in this
respect differing from ordinary rheumatism, which usually involves the
larger joints primarily. In some cases the disappearance and recurrence
of the arthritic symptoms go hand-in-hand, to some extent, with the
psoriasis. When advanced to the chronic stage the joint symptoms can
scarcely be differentiated from arthritis deformans. Deformities of the
nails are usually seen in such cases also. The writer believes that these
conditions suggest a neuropathic basis for psoriasis.

Klotz⁶ showed before the New York Dermatological Association a
case of psoriasis in which there were changes in the nails and also an
arthritic condition of the phalanges, mild, however, compared to those
observed in Strauss' case.

These cases, while not frequent, are not uncommon and are suggestive
as to etiology. It may be mentioned here that Tschisnort⁷ has found the
alkalinity of the blood diminished in this and similar diseases.

¹ Journal of Cutaneous and Genito-Urinary Diseases, July, 1898.

² Præger medicinische Wochenschrift, 1898, No. 7.

³ Wiener medicinische Wochenschrift, 1898, No. 6.

⁴ Berliner klinische Wochenschrift, 1898, No. 28.

⁵ Journal of Cutaneous and Genito-Urinary Diseases, November, 1898.

⁷ Vratich, 1898, vol. xix.; Journal of Cutaneous and Genito-Urinary Dis-
eases, November, 1898.

In connection with the neuropathic hypothesis may be mentioned the case referred to by Hallopeau and Gasue¹. The disease, in a girl of eight years, showed two conditions suggestive of nerve influence; patches in the groin region were followed, after disappearance, by persistent achromia marking the sites of the former psoriasis areas, and the eruption on one arm corresponded to the nerve distribution. Possibly bearing upon this point also is the fact that local irritation of the surface sometimes determines or influences the distribution. Thus Heller² reports a case in a young girl, in whom the eruption in a recurrent attack appeared along the course of scratch-marks on her arms. This writer also refers to two other cases of some interest: one in which one of the areas on the arm corresponded exactly with a tattoo-mark, and one in which the vaccination scar, in common with other parts, was the seat of a typical patch.

From an etiological stand-point the cases reported by Didama³ are of interest. In one, a male patient suffering with spinal disease, and for some years later psoriasis also, had been in the habit of taking morphine daily for the relief of pain; this being suspected of possible causative influence in the psoriasis, the drug was suspended, and in the course of a month and a half the eruption had disappeared. The writer refers to a second case of similar nature which had since come under his observation.

Leukoplakia oris occurring in psoriasis patients has usually been viewed as a psoriasis of the mucous membranes, but this view can scarcely be maintained, according to Schütz,⁴ as he has observed the same condition in two cases of tylosis and in five cases of chronic scaly eczema. He is of the opinion that the occurrence of the leukoplakia, with various diseases of the skin attended with increased cornification, is not purely accidental, but that these affections—of the skin and mucous membrane—must be dependent upon a common cause.

Munro⁵ contributes something new to the histopathology of the disease. His investigations were made on the earliest stage of the lesions, in this way avoiding the confusion produced by the secondary changes which take place, and his conclusions, based on examinations of 1500 sections, are to the effect that the first lesion is a minute erosion of the surface of the epidermis, in which a number of leucocytes gradually collect, producing a miliary abscess. These miliary abscesses, the writer therefore considers, are the primitive lesions of this disease. The other

Bulletin de la Société Française de Dermatologie et de Syphiliographie, July, 1898.

² Deutsche medicinische Wochenschrift, December 29, 1898.

³ Philadelphia Medical Journal, November 19, 1898.

⁴ Archiv für Dermatologie und Syphilis, December, 1898.

⁵ Annales de Dermatologie et de Syphiliographie, November, 1898.

changes, those which characterize the more advanced diseased areas, are due to the epidermic reaction, the hyperkeratosis being thus produced. Although a careful search was made no specific organism was discovered.

TREATMENT. Richter¹ has had good results in obstinate psoriasis patches with an ointment made up of 3 to 10 per cent. each of salicylic acid, oxidized pyrogallol, and ammonium sulphoethyolate, 10 per cent. olive oil, and sufficient lanolin to make 100 parts; the quantities of the active ingredient are varied according to the obstinacy and the degree of irritability of the skin.

Vollmer² rightly emphasizes the value of baths in the treatment of this disease, combined with the ordinary therapeutic measures. He especially commends chemical baths of sulphur, brine, or alkalis sufficiently strong to produce cutaneous irritation. He believes that such combined treatment gives longer intervals of freedom from the disease. The brine baths are to be avoided in psoriasitic cases with associated arthritic symptoms. The value of baths in the treatment of this disease is generally admitted, but the precept might be added that strong irritating baths should be at first used cautiously.

Rille³ presented three cases of the disease before the Vienna Dermatological Society treated with hypodermatic injections of sodium cacodylate, a remedy formerly advocated by Jochheim and later by Danlos. After fifty daily injections of a syringeful of the solution (4:10) cure had resulted in two cases, and the third showed marked improvement. The writer considers it more especially useful in the acute disseminated types.

Hallopeau⁴ has been trying in an extensive case the effect of injections of testicular liquid obtained from the bull; five grammes daily had been administered for six weeks, and then the month following twice weekly. There was some effect, but not marked or promising. In previous years the same patient had been practically relieved of her eruption by the common methods of treatment in a period of six weeks. The writer referred to his former experiments in the use of thyroid in the treatment of cases of psoriasis as being negative of results—a statement borne out practically by the experience of others—but at the same time it should also be admitted that exceptionally it acts with promptness and good effect.

Dermatitis Exfoliativa. There are various case varieties included under this head. Some are mild, a few are rapidly fatal. In this former class belongs the case reported by Diehl,⁵ in which, without

¹ Monatshefte für praktische Dermatologie, October 1, 1898.

² Deutsche Medizinalzeitung, 1898, No. 46.

³ Monatshefte für praktische Dermatologie, February 1, 1899.

⁴ Journal des Maladies Cutanées et Syphilitiques, September, 1898, vol. x., No. 1.

⁵ Journal of Cutaneous and Genito-Urinary Diseases, May, 1898.

preceding or accompanying general disturbances, the eruption began on the wrist and ankle and soon enveloped the whole surface. In eight days it was at its height, and was then followed by copious desquamation and improvement. A mild variety, often recurrent, is the scarlatiniform type, a good example of which is reported by Singley,¹ in a young woman, aged nineteen years, who had already had several previous attacks. At the other extreme stands Morrow's² case, a woman with a generalized eruption, presenting the objective features of this disease, at first simulating erysipelas in appearance. There was free exfoliation and a temperature elevation ranging between 102° and 105°. There was also considerable inflammation of the parotid gland. Later abscesses developed in the perineum and other regions of the body. The case terminated fatally within six weeks after its first appearance.

There are many midway cases. In fact, as W. G. Smith³ states, it is extremely difficult, from a general survey of the recorded cases, to recognize any clearly defined species. On the contrary the cases are made up of a continuous procession, from local forms to the completely generalized, from the ill-defined to the most typical. It is true, as Smith remarks, that some cases are primarily examples of the disease, while in others it seems to develop out of psoriasis and general eczema. Probably underlying it there is a special vulnerability of the skin, in certain individuals, to acute spreading catarrhal inflammation.

The exciting factors cannot always be determined. In Diehl's case the disease followed typhoid fever; Morrow's case suggested, as he states, a streptococcus infection. I have seen one or two instances in which quinine was the etiological factor, and some of the milder obscure cases might be explainable on the drug basis.

Herpes Zoster. The nature of this disease is as yet not thoroughly known. It is now recognized that the area of distribution of eruption does not always correspond to one nerve, nor even to that of inter-branching nerves. Cases are occurring from time to time in accord with this. Thus Blaschko⁴ presented before the Berlin Dermatological Society a patient in whom the eruption on the breast was over the fourth and fifth ribs, while posteriorly it was over the ninth and tenth. The writer thinks the explanation of this must be due to an interlocking of the nerve fibres in the spinal cord.

Double-sided zoster is also exceptionally encountered, and probably points to some central lesion. The past year has recorded a few instances of this double distribution; one by Hallam,⁵ involving both sides of the

¹ Philadelphia Medical Journal, September 10, 1898.

² Journal of Cutaneous and Genito-Urinary Diseases, November, 1898.

³ British Journal of Dermatology, December, 1898.

⁴ Monatshefte für praktische Dermatologie, August 15, 1898.

⁵ Quarterly Medical Journal, January, 1898.

face, and the other by Colcott Fox,¹ seated upon the upper and inner third of both thighs. In this latter case, excepting the distribution, there was nothing out of the usual. In Hallam's case the nose and eye were involved, and the symptoms were of considerable severity.

Clinical examples of other associated symptoms showing nerve relation to this disease are not infrequent. In the case reported by Truffi,² for instance, the zoster groups were upon the region more closely corresponding to the facial nerve than to the trigeminus, and shortly after the outbreak there was paralysis of the side of the face upon which the eruption was seated.

Certain general conditions have long been considered predisposing factors in many cases, and, as Weber³ notes, it is not uncommon to find such patients suffering from rheumatism, renal disease, neurasthenia, etc.

Sex, it is known, has no etiological bearing; the disease is common to both, with possibly a slight preponderance of male subjects. Cantrell's⁴ analysis of 193 cases confirms this, but shows an overwhelming preponderance in zoster pectoralis—out of 62 cases of the disease involving this region 58 were males.

Regarding the symptom adenopathy, to which attention has more recently been directed, this can be looked upon as fairly constant, and it can scarcely be considered as secondary, as most observers have made special note that it is observed at the outset. It is probable, as Hay observes, that it is often overlooked. He further calls attention to the fact that its extent may vary—that it may be unilateral, bilateral, or general. Blaschko⁵ considers this symptom, judged from his own cases, as always present, and one which points toward an infection. As further bearing upon the possible infectious character of the disease may be mentioned the case related by Zaugg.⁷ In this case, a few days after the outbreak, which was abundant and involved the right side of the face, there was noted a high degree of hæmaturia. No casts were found. There were also attacks of severe pain not only in the region of the eruption but in the limbs and joints, and a mild erythema upon the extremities.

Blaschko also refers to the epidemic of zoster cases in Berlin in March and April of 1898, and, as he states, we can scarcely avoid accepting such observation as pointing toward either climatic conditions or an infection as the etiological factor. It is the experience of all observers.

¹ British Journal of Dermatology, July, 1898.

² Giornale Italiano delle malattie veneree e della pelle, 1898, No. 6.

³ Journal of Nervous and Mental Diseases, December, 1898.

⁴ Philadelphia Medical Journal, March 26, 1898.

⁵ Journal of Cutaneous and Genito-Urinary Diseases, January, 1898.

⁶ Loc. cit.

⁷ Correspondenzblatt für Schweizer-Aerzte, 1898, No. 14.

it is true, that zoster is at times present to a much greater extent than at others, and this is of some weight in considering the etiology of the disease. The eruption may result, however, from direct exposure to cold, as has been frequently noted. McConnell's¹ case is an example of this: A healthy woman, after washing her scalp, walked out in the night air without head covering, having as a result a trigeminal neuralgia; the next day there was an outbreak of zoster in the region supplied by this nerve.

Hays' paper² is a clear presentation of the etiology and pathological facts in this disease, and while his views as to its infectious origin are not held by the majority of dermatologists, yet they show the trend of opinion. His conclusions are: 1. Among a number of zosteriform eruptions zoster is a distinct disease that has a definite course. 2. True zoster is of an infectious origin. 3. The herpetic eruption in genuine zoster is preceded by adenopathy in the neighborhood of the eruption and often by bilateral or even general adenopathy. 4. The eruption is in the nature of a trophic disturbance, and probably the infective agent has a selective affinity for the sympathetic ganglia, and segments of the cord and tracts supplied by these segments are affected rather than any individual spinal nerve.

Dermatitis Herpetiformis. The symptomatology of this disease has been graphically presented during the past few decades, beginning practically with Bazin's "*hydroa bullosum*," in 1862, followed, after a lapse of years, in 1880, by Tilbury Fox's "*hydroa herpetiforme*," and then finally by Duhring's masterly presentation under the name of "*dermatitis herpetiformis*," which has given the disease a permanent place in dermatological classification. A graphic and succinct description of the disease was read before the London Dermatological Society by Jamieson.³ This, together with the discussion,⁴ while presenting very little that is new, presents clearly our present knowledge of the subject.

While average cases of this disease are characteristic in their symptomatology, cases are being reported from time to time of atypical features, so much so that their right to a place in this group is questioned. The relationship between this affection and several other vesicular and bullous diseases is, indeed, a close one, judged by clinical appearances, and at times it is difficult to say, without prolonged study, to which the case belongs. Atypical cases of dermatitis herpetiformis are doubtless on the border-line. Thus Durand⁵ reports a case in a girl, aged sixteen years. The eruption, chiefly of a vesicular and bullous type, and usually limited to several regions, had been observed about twice yearly for

¹ Philadelphia Medical Journal, March 19, 1898.

² Loc. cit.

³ British Journal of Dermatology, March, 1898.

⁴ Ibid., April, 1898.

⁵ Journal des Maladies Cutanées et Syphilitiques, September, 1898.

thirteen years, preceded and accompanied with a good deal of itching and burning. Between these active attacks, which lasted three or four weeks, nothing was to be seen except some superficial infiltrated erythematous plaques, usually marking the affected areas. At the last attack the eruption was about the hands and flexor surfaces of the elbows and knees. In this case, I feel sure, there would be a difference of opinion, some regarding it as a recurrent bullous erythema, but it probably represents a midway case, which all observers occasionally encounter.

Corlett¹ has also reported a case, before the American Dermatological Association, in which the eruption, recurrent in character, was limited to certain areas, as the inner surface of the thighs and the ulnar regions of the forearm. It made its appearance in 1894, and the present attack was the seventh. The eruption was multiform in character and made up of papules, a few pustules, bullæ, and numerous vesicles. In this case the chief points of interest were the multiform character, with a preponderance of the smaller bulke, intense itching, the limitation to certain areas, the recurrences, and the complete immunity for several months. This case, therefore, presented unusual features, and its position under dermatitis herpetiformis was questioned by several members of the Association, yet as White,² in the discussion, rightly remarked, "It seemed that this case and others which would present themselves in the future would show that we could not accept a narrow definition of the disease or else a half-dozen new names would be necessary." A similar case,³ as regards the appearance on limited areas, was quoted by me, in which the eruption, typical of the vesicular variety of the disease, had remained practically confined to the middle line of the trunk, anteriorly and posteriorly, extending several inches toward each side, and had persisted for a year or more. Not only is Brocq's⁴ case somewhat similar as regards this limitation of the disease to more or less circumscribed areas, but it presents another exceptional phase: there was a tendency in a few of the plaques to the formation of smooth cicatrices on which epidermic cysts were subsequently formed.

The pathology and pathogeny of dermatitis herpetiformis are still obscure; in fact, it is only recently that much work has been done in this direction. Leredde,⁵ who has given a good deal of attention to these subjects, has recently given expression to his views. His investigations seem to show that dermic lesions (deep-seated) are always present and have the determining influence on those of the epidermis. The

¹ *Journal of Cutaneous and Genito-Urinary Diseases*, February, 1899.

² *Ibid.*, September, 1898.

³ *Bulletin de la Société de Française de Dermatologie et de Syphiligraphie*, July 1898, No. 7.

⁵ *Gazette des Hôpitaux*, March 26, 1893; *Edinburgh Medical Journal*, 1898, No. 100.

following may be usually noted : Marked œdema of the connective tissue about the dilated vessels ; usually cell-masses, consisting of lymphocytes alone, more rarely of proliferating connective-tissue cells, and occasionally plasma cells ; eosinophiles are found in the derma and epiderm, both near and remote from the vessels ; some escaped red blood-corpuscles are to be seen, and, when abundant, doubtless account for the hemorrhagic forms. The writer's study also shows that the vesicles have their beginning in the deep epidermic layers, and only gradually enlarge and work upward ; the frequently observed pruritus in a region before an actual visible outbreak may be due to this fact. Of the white cells contained in the vesicles and bullæ, on an average over one-half were eosinophiles. Leredde believes that the vesicles are the primary essential lesion, and that the other lesions sometimes observed, such as pustules, etc., are due to subsequent superficial infection. The writer is also inclined to consider the pemphigus vegetans of Neumann and the pustular and vegetative dermatitis of Hallopeau as belonging to the dermatitis herpetiformis group, a view which, judged by clinical symptoms alone, has little if any support. He considers the slow progress of the vesicle outward sufficient to explain the different clinical appearances. The importance of the eosinophile cells, in this writer's judgment, is shown in his statement that "the excretion of the eosinophile cells by the skin seems to be an essential part of the cutaneous alterations in this disease," a view closely in accord with that of Hallopeau, Lafitte, and Danlos, although it is somewhat weakened by the fact that eosinophile cells have been found in vesicles and blebs of other affections.

As to the pathogeny, Leredde's views, as quoted by Jamieson,¹ may be briefly repeated : "The neurotic theory has long been in favor, yet cannot be said to be proved. The pruritus, for example, may be due to toxic substances migrating into the derma, and thus acting locally on the sensitive nerves. The coexistence of major dermatoses with severe affections of the nervous system is exceptional. The alteration in the blood (eosinophilia) already mentioned rules the pathogeny. In general the gravity of the disease bears relation to the degree of eosinophilia ; with the disappearance of the latter the cutaneous symptoms subside. Certainly, eosinophilia is not the sole change in the blood, though it is the chief one ; it is necessary also to study the alterations in the serum and the leucocytosis. The eosinophiles constantly being produced in the organism are being eliminated by the skin, as are the toxic substances stored up in the leucocytes or in solution in the fluid of the vesicles or bullæ. The diminution of the urinary toxicity and of the amount of urea excreted reveals important disturbances of nutrition. But the part

¹ Edinburgh Journal, 1898, No. 46.

played by renal insufficiency is still undetermined. Be that as it may, dermatitis herpetiformis is a hæmato-dermatitis, like purpura. It may be due to toxins abnormally generated, or it may be toximicrobial. We are, indeed, led to suspect the existence of a microbial infection which, like syphilis, determines the exanthematic outbreaks. It is not, it is true, contagious, but it is not the only microbial disease which has not yet been proved communicable."

TREATMENT. But little has been recently contributed toward the therapeutic management of this troublesome disease. Brocq¹ has treated a few cases with static electricity, which seemed to exert a tonic effect and to relieve the itching. Jamieson has noted,² as have several other observers, that arsenic in some cases restrains the course of the disease, limiting the eruption of vesicles and blebs. He believes that when its good effect ceases it should be intermitted; its resumption later, again, having a favorable influence; liquor acidi arsenici, with strychnine, seemed the most efficient, and as external remedies, sulphur and ichthyol gave him the most satisfaction. Arsenical treatment has many doubters; it is too true that it is often disappointing, but I feel convinced, from my own experience, that it is helpful in some cases. Roberts³ and Mackenzie⁴ hold a similar opinion. Morris⁵ and Pringle⁶ both mentioned the relief from itching from phenacetin internally, the latter also having a similar experience with antipyrin. Mackenzie indorses Dühring's observation as to the value of sulphur as an external application; he states that he has completely cured one case with this remedy, although it has failed in others.

Pemphigus. True pemphigus cases are rare in this country, most cases being examples of dermatitis herpetiformis, bullous erythema multiforme, and urticaria bullosa. It is also noted that occasionally impetigo contagiosa may present pemphigoid lesions. These last three diseases doubtless furnish from time to time some of the alleged cases of acute pemphigus of short duration. The case reported by Shillitoe,⁷ in a girl of nineteen years, seems a clear example of the acute type. The eruption, consisting of pea to walnut-sized blebs, was scattered over various parts. At first clear, they later became purulent, and some hemorrhagic. In places they coalesced and formed large areas of sodden epithelium with mucopurulent discharge. There were exacerbations, the disease lasting in all six months. There was no constitutional disturbance, in this respect differing from many of these acute cases.

Roach⁸ refers briefly to a case of chronic pemphigus, the more usual form of the disease. It was in an extremely young patient, a boy of

¹ Loc. cit.

² British Journal of Dermatology, March, 1898.

³ Ibid., April, 1898.

⁴ Ibid.

⁵ Ibid.

⁶ Ibid.

⁷ Lancet, November, 1898.

⁸ Ibid., January 11, 1899.

seven years, in whom the disease had persisted almost since birth, and presented the ordinary lesions.

Hallopeau and Constensoux¹ report a case of this variety, especially interesting for the reason that osteomalacia developed eight years after the beginning of the pemphigus eruption. This would almost seem a coincidence, but it is possible, as these writers observe, that the osteomalacia was due to the resorption of the collagenous material from the bones, to compensate for the loss of organic substances by the cutaneous surface.

It is probable that many and diverse causes are operative in bringing about pemphigus. In Shillitoe's case bacteriological examination of the clear fluid from the bullæ showed the presence of the diplococcus described by Demme. Of etiological significance in this case is to be mentioned the occurrence of superficial whitlows on several of the fingers a month prior to the bleb eruption. As Shillitoe states, Pernet has recorded several such cases observed in butchers in whom whitlows preceded, and which may have resulted from infection from the meat. This patient also, owing to her occupation as a cook, was brought in daily contact with raw meats. It may be, too, that the development of some toxin may occasionally be responsible; this seems possible in a case of acute pemphigus reported by Rose,² the disease developing in the course of a fatal case of alcoholic delirium.

Interesting post-mortem findings are reported by Brocchieri,³ who made examinations of the spinal cord in a middle-aged woman dying of pemphigus. A naked-eye examination showed the presence of a number of hemorrhages, chiefly in the gray matter, and microscopical examination confirmed this appearance. The vessels of both gray and white substance, as well as those of the meninges, were surrounded in places by escaped blood-corpuscles and leucocytes; their walls in places showed thickening of the middle coat. Actual hemorrhages had occurred in both white and gray substances and in the nerve roots, the gray matter of the anterior cornua and commissures being most affected. There were accumulations of leucocytes here and there throughout the cord, and especially in the neighborhood of the central canal. The multipolar cells of the anterior cornua and of Clarke's columns contained masses of coloring matter, evidently formed from extravasated blood-corpuscles, and showed in places degeneration of both nucleus and protoplasm.

TREATMENT. Very little is recorded on this point. Shillitoe gave arsenic, the most common constitutional remedy, in his case, but, it seemed, without influence. Locally, the application of iodine lotions,

¹ *Annales de Dermatologie et de Syphiligraphie*, vol. ix., No. 11.

² *Montreal Medical Journal*, January, 1899.

³ *Giornale Italiano delle malattie e della pelle*, Fasciculus iii., 1898; *British Journal of Dermatology*, January, 1899.

1:1000, and the use of liquor carbonis detergens gave the most relief.

Pemphigus Neonatorum. Several cases of this disease have been reported by Holt,¹ Beck,² Knocker,³ and Hellier.⁴ In Holt's, Beck's, and Hellier's three cases the children were under nine days old when the blebs appeared, and apparently healthy, and all died in the course of several days. In Knocker's two cases the eruption appeared several days after birth also, but the disease was not of a grave type. These both recovered, and were in fairly good health during the eruption.

The cause of this usually fatal disease has not yet been definitely settled, but its independence of syphilis is generally recognized. In the two youngest infants, referred to above, bacteriological examinations were made and disclosed micro-organisms.

In Holt's case there was associated general staphylococcus infection. A bacteriological examination of the contents of the bulke revealed pure cultures of staphylococcus pyogenes aureus. Autopsy and bacteriological examination, thirty-one hours after death, showed the involvement of the lungs and liver, where the same staphylococcus was found, combined in the lungs with the bacterium lactis aërogenes and in the liver with the streptococcus longus. The staphylococcus was injected into a mouse with positive results, and the same organism was recovered from the blood of the heart of this animal.

In Beck's patient both the contents of the large serous and sero-purulent blebs and the blood were examined during life: diplococci in large numbers could be demonstrated, somewhat less numerous in the blood than in the blebs. He refers to the report of similar cases by Gibier, Sahli, Claessen, and Demme, in which the investigations gave positive results. In the cases reported by Knocker, before the London Dermatological Society, particular interest lies in the fact that both children had been delivered under the care of the same nurse, who subsequently looked after them, washing them daily. In discussing these two cases the general consensus of opinion of the Society was that such mild cases, which were by no means uncommon, were mild types of pyoderma, the result of inoculation of pus-forming organisms in a non-virulent state.

These five cases seemed free from any suspicion of syphilis, and it is possibly true, as Holt suggests, that many pemphigus cases regarded as syphilitic will be found to belong in the same category as the cases here reported.

¹ New York Medical Journal, February 5, 1898.

² Monatshefte für praktische Dermatologie, April 15, 1899.

³ British Journal of Dermatology, June, 1898.

⁴ Ibid., January, 1899.

Luithlen¹ has had an opportunity of studying the histologic changes in two cases. Staphylococci were found at the edge of the blisters, and the bleb fluid contained degenerated cells and leucocytes. He believes the disease to be infectious, and thinks it possible that the children are infected by the physician, midwife, or nurse, and that the infection may take place from various contaminated articles used in giving the bath, etc.

TREATMENT. Many of these cases go to a fatal issue in spite of all treatment. Munz² advises that newly born children suffering from pemphigus should be given a bath of 90° F., to which an astringent or disinfectant has been added, twice daily, or in case of weakness, once a day or even every other day. The infant should remain for from five to ten minutes in the bath. If a disinfectant is required, potassium permanganate may be added in such a quantity that the bath-water acquires a light purple color. Before the child is put into the bath the larger pemphigus blebs should be carefully emptied by pricking them with a needle and the contents removed with a mop of absorbent cotton-wool dipped into 2 per cent. boric acid solution.

After the bath the skin must be carefully dried (avoiding friction) and dusted over with a dusting-powder composed of two parts of airol and ten parts of amylum.

Congenital Bullous Dermatitis with Epidermic Cysts. A peculiar case of bullous eruption in a girl, aged twelve years, is reported by Bowen.³ The malady began when the patient was three weeks old, the first lesion being a blister on the dorsum of the foot. Since this period constant outbreaks and recurrences of blebs have taken place. The eruption has been for the most part upon the extensor surfaces, more particularly the legs, especially the knees and feet, the elbows, the wrists, and backs of the hands. The eruption had been much more active in summer than in winter. The blebs often resulted from slight blows or knocks. Sometimes the blebs are hemorrhagic, with subsequent pigmentation. At times there has been itching, but never marked. Some of the lesions have been followed by slight scarring. On those parts where the disease is most active milia-like bodies are to be seen.

Hydroa Vacciniforme. This disease, known also under the name of "recurrent summer eruption," "hydroa æstivale," "hydroa puerorum," is rare. It has certain well-defined features, and in its mildest character is well illustrated by Colcott Fox's⁴ case, shown before the London Dermatological Society. The patient, a boy of fourteen years, was experi-

¹ Wiener klinische Wochenschrift, January 26, 1899.

² Der Kinderarzt, February, 1899; Monthly Cyclopædia of Practical Medicine, April, 1899.

³ Journal of Cutaneous and Genito-Urinary Diseases, June, 1898.

⁴ British Journal of Dermatology, November, 1898.

encing his first attack, and presented on the face and ears, and to a less extent on the backs of the hands and forearm, a copious eruption of discrete inflammatory hemp-seed-sized lesions, which on close examination could be seen to be surmounted by clear vesicles. The minute scars, already left from disappearing lesions, were present in numbers. The case is unusual, however, in having its beginning much later than commonly observed.

Two of White's¹ cases, briefly, are typical examples, and the disease may be thus described: The eruption appears after a walk in the open air or exposure to the burning sun. It is generally agreed that it begins in the first few years of life, usually between the first and second year, almost exclusively in boys, and chiefly in the spring and summer, after exposure to the sun. The eruption consists of small and large vesicles, which coalesce to form bullæ, on the face, hands, and other exposed parts, thus giving rise to appearances somewhat resembling vaccinia. Scarring marks the site of old lesions.

White also refers to two recent cases under his observation presenting similar lesions, but anomalous as to season and distribution. One was a girl of ten years, in whom it had existed since her first year, appearing late in winter and persisting till April. Her general health had always been good. The lesions had made their appearance on the face, ears, hands, lower arms, and lower legs, and there was a good deal of scarring. The other case was a boy of eighteen months; the lesions, distributed over the face and extremities below the knees and elbows, some hemorrhagic and some containing pus, were followed by the usual scarring. The alæ of the nose were considerably destroyed.

McCall Anderson's² two cases are unusual in the fact that the patients are brothers, and the eruption had persisted several years beyond the time (toward manhood) at which it usually spontaneously disappears: one is aged twenty-six and the other twenty-three years. In the former it had begun in early life, about the age of five years, and recurred annually, lasting through the warm weather. The lesions were quite large, varying in size from a pea to a dime, and filled with greenish serum. It especially involved the face and hands, and had been so active that it had brought about considerable shrinking and deformity of both places. In the younger brother the disease had begun when three years of age, and in extent and character was similar to that of his brother.

McCall Anderson found hæmatoporphyrin in the urine of both cases. White was not able to confirm this observation in the examination of the urine in his cases.

The most significant feature of this disease, as Fox³ remarks, is that

¹ Journal of Cutaneous and Genito-Urinary Diseases, November, 1898.

² British Journal of Dermatology, January, 1898.

³ *Ibid.*

so benign and innocent-looking eruption should leave scarring behind. The essential points in the diagnosis, succinctly stated by this writer, are: (1) The papulo-vesicular (and vesicular and bullous) character of the eruption; (2) its distribution; (3) its apparent excitation by sunlight; (4) and its scar-formation.

FIG. 4.



Hydroa vacciniforme. (McCALL ANDERSON.)

Erysipelas. This is always an interesting disease to consider, as the mass of contributed literature during the year bears evidence. Valuable statistics are quoted by Rodman¹ from the last United States Census Report. There were 2663 deaths, and an average death-rate of 16.47 per 100,000 inhabitants. The extremes of life show the greatest proportion of deaths, as follows, per 100,000: Under five years, 31.34; five to fifteen years, 0.81; fifteen to forty-five years, 2.80; forty-five to sixty-five years, 8.88; and sixty-five years and over, 38.55. In the

¹ Journal of the American Medical Association, September 3, 1898.

Louisville Health Reports for the past ten years, out of 79 deaths 17 were in the colored race.

As to the mode of entrance for the infection, Allen,¹ in a series of 100 cases, states that in 50 per cent. some skin defect was found to be the starting-point; in 9 cases the throat; in 3 by means of a nasal catarrh, and in 2 through a lacrymal fistula. The frequency of nasal affections in cases of facial erysipelas was very striking, so much so that Allen feels justified, in the absence of any demonstrable skin or throat lesion, in considering the nose as probably the place through which infection enters.

In discussing the nature of erysipelas, Hutchinson² states that it is probable that the micro-organisms having once gained access to the cutaneous tissues never afterward leave them, and may remain there completely latent for indefinite periods, ready at any time on provocation to show activity. He believes, moreover, that the specific micro-organism is sometimes associated with other microbes in the disturbance excited. He calls attention to the fact that the characteristics of erysipelatous inflammation, a term he prefers to that of erysipelas, are by no means always present together. The florid congestion may in rare instances be wanting, and he has observed oedematous swelling, without any trace of hyperæmia, start from an operation wound and spread extensively—"a condition entitled, he thinks, to the name of "white erysipelas." Further, he has occasionally observed cases in which blood-staining rather than congestion takes place, the erysipelatous areas being brownish in color. (Edema he considers the most essential diagnostic character; the usual well-defined border may sometimes be but slightly marked, or present at one part and absent at another.

It is a recognized fact, I think, that, as Hutchinson states, one attack of erysipelas does not prevent others, but, on the contrary, predisposes to further outbreaks. This gives strength to the assumption that when once in the tissues the coccus is apt to remain. This fact of possible recurrence, considered with the experiments of Cobbett and Malsome, makes it probable, it seems to me, that there must be a contributing underlying constitutional factor which helps to determine outbreaks. These gentlemen, having observed that in cases of erysipelas the disease would disappear at one part while developing at other parts adjacently, were led to study the local immunity produced by circumscribed inflammatory processes, as the above observation indicated that the recovery was due to some local protecting process and not to any acquired general immunity. For the purpose of testing this point they inoculated the ears of rabbits with the streptococcus, and as soon as the rabbits had

¹ Medical News, April 8, 1899.

² Medical and Surgical Review of Reviews, January, 1899.

³ Centralblatt für Allgemeine pathologie und pathologische Anatomie, October 18, 1899.

recovered they were reinoculated in the same region; one ear was used for control. These experiments showed that there was complete local immunity in the reinoculated ear, but only a slight degree of general immunity. This immunity seems due to increased rapidity of the vascular reaction. This same immunity would also follow inflammation produced by other irritants. Oil of mustard was applied, and it was noted that if the ear was inoculated with the streptococcus within two days after such irritant was applied the usual erysipelas resulted; but after the lapse of a longer time the ear was found to be immune. As confirmatory of the suggestion as to a contributory underlying factor mentioned above, I may say that these gentlemen also found by one experiment that this protective influence is not as vigorous in an animal suffering from some constitutional debilitating affection.

That there is a general infection in many of these cases, even of the milder varieties, seems emphasized by the fact referred to by Monteux,¹ that not infrequently acute articular rheumatism is seen in association with it, although he personally, in opposition to Achalme's view, does not consider it dependent upon the streptococcus causing the erysipelas. It is possible the mixed microbial infection suggested by Hutchinson may explain such cases. It is probably true, however, as Labit² thinks, that the prompt effect of purely external treatment proves that the disease primarily is purely local.

TREATMENT. As one gains in experience he learns that it is difficult to gauge the value of a line of treatment in diseases which in the vast majority of cases would go on spontaneously to recovery. In a disease like erysipelas, therefore, it is only by observing the use of a special remedy in large numbers of cases that a correct conclusion can be formulated. The essence of the alleged successful treatment of this disease by so many external agents must lie in the fact that all these remedies have some destructive or other influence upon the streptococcus, or perhaps it is as some of the experiments of Cobbett and Melsome seem to prove, that the reactive inflammation is an efficient aid.

The use of antistreptococcic serum is one of the latest candidates for favor. Cotton³ quotes Marmorek as having treated 413 cases with the serum, with a mortality of 3.87 per cent., which compares favorably, although only slightly, with a former series in the same institutions, without serum treatment, in which the mortality percentage was 5.12. The difference is too slight, however, to eliminate the usual errors common to statistics.

Magill reports (reference lost) a single case of erysipelas in which

¹ *Revue de Médecine*, January 10, 1899.

² *Bulletin de Générale de Thérapeutique*, 1898, 14e liv., p. 540.

³ *Boston Medical and Surgical Journal*, February 2, 1899.

there were several relapses continuously, one after another, in the last of which there were septic temperature variations. Nine days after these symptoms presented the patient was given an injection of 10 c.c. of serum. The effect was immediate; the temperature dropped to normal and remained so, and the cutaneous symptoms abated.

Robinson¹ treated two grave cases with this method with prompt success. Andre² likewise reports favorable action in five cases. Its favorable action is also recorded by Bristow,³ who says, from his experience, that cases of idiopathic erysipelas may be quickly controlled by the serum, rarely more than two injections of 10 c.c. each being required.

From the various reports it would seem that in grave cases a recourse should be made to this treatment, especially, Cotton⁴ states, as the complications produced by its use are so few and so slight that they should constitute no valid objection. He urges larger doses than are commonly employed.

It will hardly be contended that the serum treatment should be invoked for the many mild cases, such, for instance, as are frequently encountered as walking patients in dispensary practice. It is in these cases especially, naturally favorable and rapid in their course, that the many local remedies have gained their reputation. In no class of cases, however, does it seem to me that the harsh plan suggested by Rabinowitsch⁵ should have a place. This writer practically cooks the diseased areas, by first covering the parts with moist gauze, and then passing over this, to and fro, a lighted swab of cotton wet with alcohol; this is done till the pain is almost unendurable. This is repeated three times in the twenty-four hours. There results, as would be expected, an intense local inflammation, occasionally with vesication. If extensive, only the borders are thus treated. He claims good results, and has treated in this manner more than two hundred patients.

Compare to this Allen's⁶ plan, equally or probably more successful. In those cases in which he has reason to suspect a nasal origin he applies an aqueous solution of ichthyol, 50 per cent. strength, to the anterior nares, and as far as possible in the posterior nares also; to the diseased cutaneous areas a 25 per cent. solution in collodion is employed. His results, he alleges, have always been satisfactory, improvement in all symptoms setting in within twenty-four hours. Attention to the throat and nose is urged as a prophylactic measure. No stress is placed on constitutional medication.

¹ Journal of American Medical Association, December 24, 1898.

² Archives de Médecine et de Pharmacie Militaire, 1898, No. 11.

³ New York State Medical Society, Philadelphia Medical Journal, February 11, 1899.

⁴ Loc. cit.

⁵ Revue de Therapie, November 15, 1898.

⁶ Loc. cit.

Jamieson¹ is also enthusiastic over this remedy, which, I think, experience has found to be a valuable one. While we cannot maintain, he states, that this reducing agent kills the streptococcus, yet it is manifest that by it a process of contraction is initiated, so that the cocci no longer thrive in the altered soil. If thickly smeared over the inflamed area as a 25 per cent. ointment, made up with prepared chalk and vaseline, and covered with a layer of cotton-wool, which has the double advantage of excluding the air and acting as a cushion, to shield the very sensitive surface, an agreeable feeling of coolness is at once experienced; the further progress is arrested, and simultaneously the fever and other disturbances abate.

Koelzer² first experimented with metakresolanytol, a derivative from ichthyol, on animals in controlling erysipelas, and finding it of value, used it in five cases, one of which was severe, in man. He used a solution of 1 to 3 per cent. strength. At first the area is painted for twenty to thirty minutes, and subsequently at two-hour intervals for ten to twenty minutes. The disease was promptly checked. If the disease is extensive only the edges are to be painted.

Labit³ aborts erysipelas by painting on a 10 per cent. solution of iodol in collodion. If the scalp is invaded it must be first carefully shaved. The solution, the application of which is not painful but anodyne, is thoroughly painted over the affected area and an inch or so beyond the border. The effect is rapid, and usually within twenty-four hours the disease has abated. The pressure exerted by the collodion film the writer considers of some value, and the iodol is carried into the tissues, as shown by its appearance in the urine. Labit does not, however, consider this remedy the only specific for the streptococcus, other antiseptics being doubtless of equal value.

Acne Keratosa. Crocker⁴ reports, under this name, four cases, in female adults, of a hitherto undescribed disease, the symptoms of which he outlines. As the case usually presents itself there are finger-nail-sized, well-defined, excoriated patches covered with hard blood-stained crusts, situated on the cheeks and chin, especially near the angles of the mouth. Numerous scars of old lesions, white to red in color, according to age, are also seen. The lesions are persistent, and are, as a whole, symmetrical. They commence as red, tender, firm lumps, on which a pustule usually forms and dries to a scab, or the epidermis is detached by the underlying lymph. The patient removes the scab from an irresistible desire to squeeze or pick out soft plugs, or horny conical-like

¹ British Medical Journal, August 6, 1898.

² Deutsche med. Wochenschrift, October 27, 1898.

³ Loc. cit.

⁴ British Journal of Dermatology, January, 1899.

plugs, about one-twelfth of an inch long, which are embedded in the skin and give rise to great irritation, and sometimes cause pain and tenderness, until they are removed; sometimes there is only one plug, but there may be several. When they have been extracted the sore heals slowly, the whole process taking from weeks to months, and with a tendency to recur in the same place if all the horny plugs are not out, and in some instances to spread slightly at the periphery. By the appearance of new lesions the disease persists indefinitely, in one case forty years, slightly controlled by treatment, but never cured. The small, horny plugs are composed of epithelial horny cells with a few prickle cells and cell-nests. They apparently have their seat in the sebaceous gland or hair follicle. Etiology is obscure; in all four cases digestive disturbances were present, in three quite marked.

Furunculosis. TREATMENT. Brewer's yeast has during the past year been brought out from the recent buried past and again extolled highly for the treatment of boils. This awakening is apparently due to Brocq's¹ paper. The dose varies from one to three teaspoonfuls in plain or alkaline water three times daily. Gordon² also commends it, stating that in two cases of furunculosis a prompt effect was observed. Turner³ likewise indorses Brocq's observation. The remedy in some instances causes diarrhetic symptoms and some disturbance of digestion. Baker's yeast may be substituted, but is not so strongly commended.

Purdon⁴ speaks well of lactophosphate of lime. Stoner,⁵ however, in the belief that the disease has no underlying constitutional cause, confines his treatment to external measures. His opinion on this point is, I am sure, opposed to the experience of the majority of observers, especially in persistent, recurrent cases. As infection takes place from the surface, he believes that general furunculosis may be prevented by washing the surface of the boils and surrounding skin with antiseptics, for which purpose he commends corrosive sublimate solution, 1:500. This should be done twice daily, and after incision or rupture of the lesions, they should be well irrigated with a weaker solution of the same. It is probable, as Stoner suggests, that infection is usually carried from one part to another by the infected fingers or nails. The value of general antiseptic applications I can cordially commend from observation, preference always being given in my own practice to boric acid and resorcin lotions, and washings with the tincture of green soap.

Carbunculus. Parker⁶ commends highly the excision of carbuncle

¹ *La Presse Médicale*, January, 1899.

² *Philadelphia Medical Journal*, April 1, 1899.

³ *Therapeutic Gazette*, March 15, 1899.

⁴ *Dublin Journal of Medical Science*, February, 1898.

⁵ *Medical News*, January 14, 1899.

⁶ *British Medical Journal*, November 26, 1898.

in suitable cases, a method he has pursued in a number of instances, and which has proved superior to the common plan by incision. Absolute relief from pain is noticed to follow. The operation is not, the writer states, any more formidable than that required in excision of tuberculous glands, and is quite as justifiable.

FIG. 5.



Impetigo herpetiformis in the male. (WHITEHOUSE.)

Manley¹ adds his favorable indorsement to the value of deep hypodermatic injections of pure carbolic acid. In its earliest stages an injection of one to three drops is a sufficient quantity, but in the active, suppurative stage repeated injections of a larger quantity—fifteen to thirty drops at a time—are required. The method is not painful, and the writer has not observed any toxic symptoms. The surface is to be protected till the slough has been cast off. Free stimulation, tonics, and a nutritious diet play an important part.

Impetigo Herpetiformis (Hebra) in the Male. The third example

¹ New York Medical Record, June 18, 1898.

of this rare disease in the male subject is reported by Whitehouse,¹ the other two having been observed some time ago, one by Kaposi and the other by Dubreuilh. This case differed little in its course (ending fatally) from other examples of the disease recorded. It was characterized by recurrent outbreaks of numerous miliary pustules, the lesions being pustular from the beginning. The disease was attended by febrile and other general symptoms. There was no assignable cause. In some particulars the eruption resembled both that of dermatitis herpetiformis and that of pemphigus.

FIG. 6.



Impetigo herpetiformis in the male. (WHITEHOUSE.)

X-ray Dermatitis. The use of X-rays, like all unknown and powerful agencies, is not, unfortunately, without its dangers. Various new

¹ Journal of Cutaneous and Genito-Urinary Diseases, April, 1898.

cases, showing its untoward action on skin and tissue, have been heard of frequently during the past year in current medical literature, and also occasionally through damage suits in courts of law. Many of these accidents have occurred with those who use the rays and many in those who have been subjected to exposure for diagnostic or therapeutic purposes.

Valuable papers have been contributed conjointly by Oudin,¹ Barthelémy, and Darier. It is shown that there may result redness, desquamation, pain, swelling, vesiculation, bleb-formation, sloughing followed by cicatrices, all of which may be acute in character; and, again, there may ensue chronic conditions, such as chronic inflammation of the skin, loss of elasticity, of sensibility, thickening of the skin, scaliness, persistent sloughing, and the like. Hair and nails may also be lost through its agency. In addition to the paper by these several gentlemen, Leonard,² Behrend,³ Sherwell,⁴ Below,⁵ Unna,⁶ Noir,⁷ and others have reported one or more accidents of varying character or have discussed the subject in some of its bearings.

The most serious accident is sloughing; this is often persistent for months, frequently painful to almost an unbearable degree, and, owing to irremediability, may even render amputation advisable, as in Tuttle's⁸ case, which is also referred to by Bronson.⁹ The patient was aged sixty years, and had suffered from an injury to the knee-joint. For purposes of investigation the part was exposed to the X-rays for about an hour. A dermatitis with gangrene followed, persisting and accompanied with distressing burning pains; amputation was finally adopted. I have a somewhat similar case now under observation, involving a large area of the inner side of the thigh, which has persisted for three or four months, spontaneously painful to a distressing degree, and with but little if any tendency to heal. It followed two exposures, for the purpose of locating a rifle bullet, ten days to two weeks elapsing after exposure before the condition developed.

The skin changes have been studied by Unna,¹⁰ who found, in the milder effects, conditions leading to the conclusion that the rays set up degenerative changes in the collagenous tissue, from which result, gradually, reactionary inflammatory symptoms. Examination of the tissue in

¹ *La France Medicale*, 1898, No. 12.

² *New York Medical Journal*, July 2, 1898.

Berliner klinische Wochenschrift, June 6, 1898.

³ *Journal of Cutaneous and Genito Urinary Diseases*, vol. xvii., No. 196.

Münchener medicinische Wochenschrift, 1898, No. 9.

⁵ *Deutsche medizinische Zeitung*, 1898, No. 20.

⁷ *La Progrès Médicale*, 1898, No. 27.

⁸ Mathews. *Quarterly Journal of Rectal and Gastro-intestinal Diseases*, April, 1898; *Monthly Cyclopædia of Practical Medicine*, July, 1898.

⁹ *Journal of Cutaneous and Genito-Urinary Diseases*, July, 1898.

¹⁰ *loc. cit.*

Tuttle's¹ case showed that not only was the skin involved, but that there was an inflammation extending down to the bone; the tissues were matted together and dense, the bloodvessels had been occluded, and both the subcutaneous and intermuscular connective tissue showed marked changes.

According to experiments made on guinea-pigs, the three French observers referred to found that the skin of the exposed part showed thickening of the epidermis in all its layers, an absence of hair, with atrophy of the follicles, which had in great part disappeared.

Behrend,² from his investigations, considers the integumentary changes of scaldiness, vesiculation, falling of the nails and hair to be due to serous exudation into the cutaneous tissue.

The causes of these accidents are not yet fully explained. Personal idiosyncrasy or vulnerability is doubtless a factor. It is believed by many that it is the current and not the rays themselves which is the damaging element. Too short a distance of the tubes from the part and a current of high intensity are thought by Oudin³ and Barthelémy and Darier to be detrimental. They tried to avoid accidents by placing the tubes fifteen to twenty centimetres away and by not employing an electric intensity of more than six to eight amperes; yet in spite of these precautions in 400 cases they had harmful effects in five.

Leonard⁴ is somewhat of a similar opinion, believing the X-ray burn to be the result of the static charges and currents induced in the tissues by the high potential induction field surrounding the X-ray tube.

Tuttle⁵ has stated, in discussing this subject in the New York Academy of Medicine, that all the cases of X-ray burns so far reported have followed exposure to X-rays generated by the Ruhmkorff coil, and that none of these accidents have been known to occur in connection with the static machine. If this is really so, it is not only an interesting fact but one which deserves investigation.

It is believed by several of the observers named that the cutaneous disturbances are not primary, ascribable to local action on the cells of the derma, but that they are rather of a trophoneurotic nature, due to neuritis, and that this is not, apparently, according to Oudin, Darier, and Barthelémy, a peripheral neuritis connected with the dermic nerve terminals, but is probably at first central during the period which might be called that of the incubation of the phenomena, to become subsequently centrifugal and to manifest itself by distinct alterations of nutrition. The sluggish chronicity of the more severe types of X-ray burns, such, for example, as those in Tuttle's case, certainly indicates a persistent trophoneurotic disturbance—a similar lesion resulting from an ordinary burn would very rapidly undergo the reparative process.

¹ Loc. cit.

² Loc. cit.

³ Loc. cit.

⁴ Loc. cit.

⁵ Philadelphia Medical Journal, February 26, 1898.

PREVENTION AND TREATMENT. There seems to be considerable unanimity among the writers named as to the danger of too long and too frequent exposure, too short a distance from the body, and a high current intensity; these possibilities should, therefore, be reduced to the minimum. Leonard¹ advises the interposition of a grounded thin sheet of conducting material readily penetrable by the rays, such as aluminum or gold leaf. Darier, Barthelémy, and Oudin agree as to the safety of perforated plates of lead or other metallic leaves, but recognize the difficulty in using them satisfactorily. Unna² recommends for the protection of the frequent operator, especially those who show an idiosyncrasy, a zinc jelly containing cinnabar and bismuth oxychloride, in the proportion of 10 per cent. This is to be painted on thickly, then over this is placed a film of absorbent cotton.

The treatment of the milder types of X-ray dermatitis is essentially the same as that for similar cutaneous inflammations. The sloughing, or "burn" type, however, displays a most unyielding tendency. Curetting the sloughing surface has been advised, but, as Bronson³ states, if it had been practised in Tuttle's case it would probably have been of no avail, as the process was subsequently found to extend to the bone.

Gangrene of the Skin. Cutaneous gangrene, a rare condition, is obscure in its nature; occasionally it is observed in diabetic individuals and in those having a distinct central nervous disease. In the majority of cases, however, a clear explanation is wanting. In this last class belong the cases referred to by Randall⁴ before the Section of Ophthalmology of the College of Physicians, Philadelphia. He presented a case of recovering gangrene of the skin of the brow, nose, and right upper eyelid in a child of five years, whose brother, aged three years, and sister, aged one year, had suffered from a similar affection, the last with a fatal termination. They were the children of healthy parents and with good environments. No cause was discoverable. Equally obscure seems the case related by Marshall⁵ of a child, five months old, in whom several nodular spots appeared, becoming gangrenous and attaining the size of dimes. Fifteen such spots in various stages and regions were present when the patient died. Several pea-sized nodules and one the size of a hickory-nut were found in the lungs. The mesenteric glands were enlarged, and there was some congestion of the ileum and colon, though the other organs were normal.

Another rare form of gangrene is that involving the skin of the penis and scrotum, to which Fournier called attention some years ago. Sörgo⁶

¹ Loc. cit.

² Monatshefte für praktische Dermatologie, May 15, 1898.

³ Loc. cit.

⁴ Philadelphia Medical Journal, February 26, 1898.

⁵ Pediatrics, February, 1898.

⁶ Wiener klinische Wochenschrift, December 12, 1898.

adds another case. The general symptoms were of a grave character, and suggested systemic infection. Hartzell's case¹ of infective multiple gangrene of the skin in a woman, aged forty-six years, differs from most of the hitherto published cases by the absence of general constitutional disturbances; the patient was, however, subject to occasional attacks of diarrhoea and chills.

So far clinical and bacteriological studies have not thrown conclusive light upon these cases of skin gangrene. Diabetes, as already remarked, is an element which should be suspected. Even in diabetic cases the gangrene is probably not directly due to sugar in the tissues, as pointed out by Gussenbauer,² but to the loss of resisting power and the bad effects following infective processes in such individuals. Itching in the diabetic is not unusual, and the scratching gives entrance to pyogenic organisms, and a slow necrosis may result.

It is possible that specific micro-organisms may be the important factor. Sörgo found in his case the bacterium *fluorescens liquefaciens* and a micrococcus resembling the *staphylococcus albus*. Neither alone proved pathogenic for animals, but gangrene followed their conjoint injection in a mouse. In Hartzell's case³ great numbers of bacilli, resembling morphologically the tubercle bacillus, were found in the lowest layers of the rete and in the papillary and subpapillary portions of the corium. The *staphylococcus pyogenes aureus* was also present in numbers. Hartzell calls attention to the fact that the lesions in his case were limited to parts reached by the patient's fingers, which suggests that the disease was auto-inoculable.

In a case of disseminated cup-shaped and round cutaneous ulcerations in a child, aged ten months, reported by Triboulet and Tollemer,⁴ cultures from the lesions disclosed the bacillus *pyocyaneus*. The child died of septicæmia. The same organism was found in blood from the heart. The organisms were also present in the skin, but only in the superficial layers; the capillaries were free. The writers believe that these several facts point to the cutaneous ulcerations as the port of entrance for the bacillus which brought about the septicæmia.

TREATMENT. The possibility of micro-organisms as the cause of at least some of these cases of cutaneous gangrene seems borne out by the treatment. Hartzell⁵ found that the only successful plan of checking the spread of a lesion was complete excision. Gussenbauer⁶ also points out that thorough removal by excision of the gangrenous spots, rigidly observing the principles of asepsis and antisepsis, both at the time of operation and subsequently, will be followed by satisfactory healing.

¹ American Journal of the Medical Sciences, July, 1898.

² Wiener medicinische Blatt, February 2, 1899.

³ Loc. cit.

⁴ Annales de Dermatologie et de Syphiligraphie, February, 1898.

⁵ Loc. cit.

⁶ Loc. cit.

HEMORRHAGES.

Purpura. It is the custom to place all cases with hemorrhagic cutaneous lesions under the head of purpura, and yet it is a question whether these purpuric skin lesions may not be simply a symptom of several diseased conditions. It is difficult to connect the mild, insignificant cases with the rapidly fatal examples. The literature of the past year of reported cases shows this diversity. Thus Syers,¹ who has had abundant opportunities of seeing cases of purpura in children, is inclined to consider those numerous examples of purpura in these subjects, unaccompanied by rheumatic affection or complications of any kind, as light forms of scorbutus, due to poor, unhygienic life conditions, and insufficiency or poor quality of the food. He thinks that softness of the gums, tending to bleed easily, not infrequently observed in this class of cases, supports this view.

The purpura-rheumatic type of the disease is shown in Johnson's² case, this being interesting in the fact that the course of the disease appeared divisible into three stages or exacerbations, with relatively quiescent interim periods of eight to ten days, during which time the patient felt comparatively well. Each exacerbation of the eruption was immediately preceded by colic, rheumatic pains, and swellings.

While many cases of purpura run a tolerably rapid course, there are cases which are characterized by persistently recurring hemorrhagic spots, as in the case presented by Savill,³ in which the eruption had appeared a year previously and had recurred almost weekly. Many of these cases, as this case, show no apparent fault in the general health, and have no suggestive history.

Even in the mild class of cases the eruption may have some peculiar properties. Thus Bruce and Galloway⁴ refer to a case in a man, aged twenty-nine years, with the purpuric spots on the legs, in which after a rest in bed for some time the eruption vanished; as soon as the patient was allowed to get up it recurred. It was also noted that any irritation, such as might be produced by drawing the blunt end of a pencil across the skin of the leg, caused a white line which was succeeded by the occurrence of a pinkish reaction; in the course of two or three hours the line of skin so rubbed was marked by an intensely purpuric stripe. In this way the patient's initials, dates, etc., could be produced on the legs just as figures can be drawn in factitious urticaria, the difference being, that, instead of producing wheals, in this case bold hemorrhagic outlines were noted.

¹ *Lancet*, February 12, 1898.

² *Medical News*, January 1, 1898.

³ *British Journal of Dermatology*, May, 1898.

⁴ *Ibid.*, January, 1898.

Contrast the foregoing mild cases with the grave cases reported by C. T. Dereum,¹ Cureton,² Dawson,³ Dziechiszek,⁴ Burch,⁵ Mossé and Iversene,⁶ all of which, excepting Dawson's and Burch's cases, ended fatally and within a short but varying time, and an altogether different disease seems pictured. As an extreme and interesting example I give a brief abstract of C. T. Dereum's case: A girl of eighteen years, with a distinctly tuberculous family history, had suffered from occasional nose-bleed, and upon the slightest exertion shortness of breath and palpitation of the heart. She had onychia of nearly all the finger-nails. The gums were pale and the teeth decayed; she had had, from time to time, nine or ten teeth drawn, but there had been no marked hemorrhage; she had menstruated regularly up to two and a half years ago, since which time this function had ceased. Three weeks before her death intense pain and swelling in her right knee-joint appeared. Her temperature at the time was 100°. Shortly after this more frequent nose-bleed was noticed, but there was no difficulty in controlling it. Several days before the fatal end she was seized with severe nasal hemorrhages, and blood was seen oozing from the mucous membrane of the pharynx and mouth, and from breaks in the skin over the sacrum. The temperature now varied from 102° to 103°. On the last day bleeding occurred from the nose, mouth, pharynx, ears, nipples, bladder, vagina, rectum, and even the tears that trickled down her face were tinged with blood. At the autopsy, excepting the blanched appearance of the various organs, nothing abnormal was found.

The causes of these grave types are just as obscure as in the milder cases, especially in those suddenly developed without precursory intimations. In Dziechiszek's case the disease appeared in a man in good health, free from infection and intoxication, without any previous symptoms. The first symptoms of which he complained were dark hemorrhagic patches and bleeding from the mouth. From the day of his first examination until his death, which occurred seven days after admission to the hospital, his temperature varied between 98.5 and 102.4, reaching 104.5° before death. During the seven days he had several severe attacks of epistaxis, accompanied by an enlargement of the spleen and liver. Blood examination revealed great diminution in the number of red blood-corpuscles, the size of which was normal. The autopsy, outside of the enlargement of the liver and spleen, revealed nothing.

¹ Philadelphia Medical Journal, June 4, 1898.

² Lancet, February 25, 1899.

³ Ibid., January 21, 1899.

⁴ Gazette Lecharska, 1898, vol. xviii.; Journal of Cutaneous and Genito-Urinary Dis-

⁵ Medical News, April 8, 1899.

cases, October, 1898.

⁶ Journal des Maladies Cutanées et Syphilitiques, November, 1898.

Although Burch's findings are suggestive, one must admit that very little light is thrown upon the nature of the disease in these various carefully reported cases. A rapid diminution of the red blood-corpuscles is to be expected in these hemorrhagic cases, as referred to in the last patient, although in this respect Cureton's case is remarkable; three days before death they numbered 1,680,000, and on the day of death, 310,000. An interesting finding in this case also is that blood taken from the chambers of the heart gave colonies of streptococci.

In Dercum's case the patient was uncleanly in her habits, and had been living in a foul atmosphere; the urine vessel, neglected, contained abundant fungi. Dercum thought it possible that some bacteria, or their chemical products generated by the decomposing urine, might possibly bear some relation to the case. The easiest solution, it is true, and one that seems plausible, is the acceptance of an infection which several observers have already claimed to have demonstrated, but much remains to be learned. In this connection Burch's¹ investigations in a long-continued recurrent case in a young girl are of interest. The urine was found to contain peculiar bacilli, somewhat thicker than the colon bacillus, but about the same length, and without motility. The white blood-corpuscles showed fragmentation of the cell-wall and karyorrhexis; the red corpuscles contained peculiar bodies, one-fourth their size, which were deeply and regularly stained blue by Romonoviski's method. Burch believes them to be similar to the bodies found in a case of gastric disease, accompanied by purpura, previously described by Deney. The writer also states that he found groups of bacilli in the blood similar to those found in the urine, and the same as that described by Kolb as the bacillus of purpura hemorrhagica. An injection into a rabbit caused death at the end of seventy-eight hours; the autopsy disclosed hemorrhagic extravasation into the subcutaneous tissues and into the peritoneum and pleura, while the blood contained the same bacillus and exhibited no tendency to coagulate.

Mossé and Iversen² considered the disease in their case to be polymicrobic in origin. During life blood examinations were negative. At the autopsy they found three varieties of micro-organisms in the liver: (a) *baeterium coli*; (b) a micro-organism closely resembling the colon bacillus in appearance, but staining by the Gram method; (c) a short, thick bacillus, also staining by the Gram method. Streptococci were found in the lungs. They concluded that the primitive infection opened the door to secondary infection. Their experimental inoculations on animals resulted in one instance in producing hemorrhages in the lungs; in others the ordinary picture of the colon bacillus infection.

¹ Loc. cit.

² Loc. cit.

Unfortunately, the findings in these various cases are somewhat diverse, and if the disease is due to any specific micro-organism it still may be considered as far from being definitely proved. Possibly, as Mossé and Iversen and others suggest, there may be secondary infections which obscure the picture. Kornreich¹ suggests that some cases may be of syphilitic origin.

TREATMENT. Syers,² in those cases which he considers probably scorbutic in nature, advises the ordinary measures generally employed for scurvy—improvement in hygiene, sunlight, fresh air, and good food—and he believes the usually prescribed drugs, such as iron and ergot, excepting possibly quinine, uncalled for, as they are apt to disturb digestion.

In Dawson's case, an extremely grave one, in a girl of three years, who within a day or two after the outbreak was in extremis, almost pulseless and blanched, a deep injection of five minims of ergotin was administered in the buttock; the hemorrhages stopped almost immediately, and she gradually made a complete recovery.

Kornreich seeing no improvement in his case, of average character, following the usual plans of treatment, and noting that his patient, a man aged twenty-five years, was also subject to falling of the hair and nocturnal headaches, prescribed antisiphilitic remedies—potassium iodide and mercury—and there immediately ensued a rapid disappearance of the purpura.

Savill, in his recurrent case referred to, failing to see any benefit from iron, quinine, and various other common remedies, prescribed calcium chloride, in 20-grain doses three times daily, and there was immediate improvement.

HYPERTROPHIES.

Keratosis of the Palms and Soles. Pendred³ adds to the hereditary cases of this rare manifestation by reporting three cases which he had the opportunity to examine simultaneously in three members of the same family. The palms and the anterior surface of all the fingers exhibited hard, horny epidermis, cracked in many directions. The margin of the horny formation distinctly outlined the hand, and was marked with a thin, red line. The plantar surfaces were likewise affected, but the fissures were not so numerous. The keratosis was symmetrical, and showed itself at birth as a red area over the palms and soles. The disease appeared in unbroken succession for at least one hundred and fifty years in the same family.

¹ New York Medical Record, February 26, 1898.

² Loc. cit.

³ British Medical Journal, April 30, 1898.

Keratosi Follicularis (Darier's Disease). Bowen¹ records what he believes to be the first case of keratosi follicularis where the lesions are exclusively limited to the hands and head. He was only able to make a diagnosis after microscopical examination of the lesions. The patient, a woman in good general health, presented the eruption on the head and face, backs of the hands and palms. Bowen's examinations in this case confirm his previous view of the pathology, that it is essentially a hyperkeratosis affecting principally the neck of the follicles. He also adheres to his belief in the non-parasitic nature of the coccidia-like cells.

These so-called Darier's corpuscles Doctor² considers to be a part of the phenomena of the usually associated porokeratosis, and that they do not necessarily belong to the disease picture, other forms of cell-degeneration being much more apt to occur. His clinical and microscopical study of two cases agrees in the main, in the histological findings, with that of Bowen, although he believes that the lesions may also occur independently of the glandular structures. His contention that the differences between this disease and ichthyosis, although tolerably well marked, are not sufficiently pronounced to warrant looking upon it as a separate disease type, will, I am sure, scarcely be accepted, the clinical history of the two affections being widely different. Doctor would place it as a variety of ichthyosis, its main differences from the latter being its localization, the presence of the Darier nodules, and the proliferation of the rete mucosum and the papillæ.

TREATMENT. The treatment advised by Bowen in his case, and which produced marked amelioration, consisted in the prolonged employment of ointments containing stimulating and keratolytic agents, such as salicylic acid, resorcin, sulphur, and the like.

Keratosi Senilis. Elderly people, as it is well known, frequently have upon the skin small pea to finger-nail-sized, well-circumscribed, reddish patches, scarcely elevated, and with usually a greasy, friable crust, or sometimes with a hard, rough, and horny covering, which upon removal disclose a reddish, granular-looking surface. Parts of the face and backs of the hands are the most common sites. As Montgomery³ points out, sooner or later these undergo epitheliomatous degeneration.

Treatment of these beginning lesions is usually satisfactory, and mild applications often suffice to remove them or to keep them from advancing. I can agree with Montgomery as to the value in such cases of salicylic acid and sulphur, in the form of an ointment, a formula of which he gives, consisting of fifteen grains of salicylic acid, a drachm of precipitated sulphur, and two drachms each of vaseline and lanolin. One con-

¹ *Annales de Dermatologie et de Syphiligraphie*, January, 1898.

² *Archiv für Dermatologie und Syphilis*, December, 1898.

³ *Philadelphia Medical Journal*, January 20, 1899.

taining less of the medicinal ingredients, especially of the sulphur, will often answer the purpose. The ointment is to be gently rubbed in, with less chance of irritating, once daily.

Porokeratosis. Several interesting papers on this rare and curious affection should be noticed. Gilchrist¹ records eleven cases in one family. As he remarks, there is no doubt, when one glances at the family chart of his group, that heredity plays a very important part. The disease does not seem to be contagious, otherwise the four married members among his cases would, in all probability, have conveyed it to the respective husband or wife. There is no direct evidence to prove that the disease is parasitic, and Gilchrist's investigations go to show that Mibelli's assertion that the affection is a special form of hyperkeratosis is correct.

FIG. 7.



Porokeratosis. (WENDE.)

Basch² reports a case, in a man, aged thirty-six years, in whom there were numerous scattered patches over various parts, the disease having begun when the patient was twelve years old.

In Wende's³ case, in a woman, aged forty-five years, with patches on the dorsal aspect of the hand, there was, on the contrary, no history of

¹ Journal of Cutaneous and Genito-Urinary Diseases, April, 1899.

² Pester med. Chirurg. Presse, 1898, vol. xxxiv.; Journal of Cutaneous and Genito-Urinary Diseases, November, 1898.

³ Journal of Cutaneous and Genito-Urinary Diseases, November, 1898.

any other case in the family. It had begun five years previously as a small, rough, scaly plaque. Occasionally it became excoriated, but otherwise gave rise to no discomfort.

Wende made some experiments in inoculation, and the result, while not conclusive, is of some interest. The method of procedure consisted in lightly scarifying, sufficiently to produce an oozing of lymph, after which a small amount of the pulverized horny substance from the rift of the lesion was gently rubbed into the locality scarified, allowed to dry, and protected from friction. The scarifications, with the exception of a few upon the arms, were mostly made upon exposed parts. But a single one

FIG. 8.



Porokeratosis. (DUCREY and RESPIGHI.)

of the thirty seemingly proved a success; this occurred upon the unaffected hand of the patient having the disease, and after ten unsuccessful attempts. The first indication of his successful inoculation was the appearance of a small, rough, non-inflammatory spot, which within ten days gave evidence of a slight elevation in the centre, and extended peripherally until it attained the size of a rape-seed. It then began to flatten, without any visible signs of either discoloration or inflammation. Two weeks afterward it was accompanied by intense itching; ten weeks later it was excised, the patient urgently demanding it. This lesion was subjected to microscopical examination, and in the main gave the same findings as the large, original patch. No micro-organisms were found.

Porokeratosis may also affect the mucous membranes as well as the skin, as Ducrey and Respighi¹ state, the disease appearing as opalescent rounded patches, each enclosed by a distinct white raised line. They vary in number from two to twelve, and affect the tongue, hard and soft palate, gums, and cheeks, occurring either in groups or scattered at random over the mucosa. There is a slight zone of hyperemia surrounding each patch. The course of the affection is chronic, as it is on the skin, and it appears to cause no inconvenience.

Histological findings agree in the main. According to Gilchrist,² the disease commences as a hyperacanthosis of the rete in the region of the mouth of the tubular and acinous glands, with a decided preference for the former, then follows a hyperkeratosis. Marked changes occur in the corium—viz., large numbers of lymphoid cells, dilatation of the bloodvessels and lymphatic vessels, etc.

TREATMENT. Gilchrist reports on treatment. In his first case it extended over two years, and consisted of excisions in all the small lesions of the face; scars, of course, resulted, but they were not very marked. In two cases the electric needle, which had not previously been tried in this disease, was used with excellent results; it caused very little scarring, and there had been no return. He would recommend this mode of treatment especially for lesions on the face, as it appears to eradicate the disease.

Acanthosis Nigricans. Several cases of this interesting and rare disease have been reported during the year. Spietschka³ records three, one man and two women. In one of the latter the disease began six months after confinement with a meat-colored vaginal discharge and the involvement of various parts of the skin; deciduoma malignum of the uterus was found, after the removal of which the skin symptoms entirely disappeared. In Dyer's⁴ case the patient was an Italian boy, seven years of age, and the skin manifestation involved almost the entire surface. There was no scaliness except on the scalp. The entire skin was dark, in places much thickened, and on the ears gave the sensation of a nutmeg-grater roughness to the touch. The dorsal surfaces of the hands and feet were cornified, the palmar and plantar surfaces being thickened and seemingly almost translucent. There were numerous flat sessile warts, dirty gray to brownish in color, and slightly elevated. The scalp was almost completely bald, and the eyebrows and eyelashes had also disappeared. The general health remained unaffected. Barsky's⁵ case pre-

¹ *Giornale Italiano delle Malattie Veneree e della Pelle*, fasciculus iii., 1898; *British Journal of Dermatology*, January, 1899.

² *Loc. cit.*

³ *Archiv für Dermatologie und Syphilis*, 1898, vol. xliv.

⁴ *New Orleans Medical and Surgical Journal*, 1898.

⁵ *Vratch*, 1898. *Journal of Cutaneous and Genito-Urinary Diseases*, February, 1899.

sented in addition to the usual symptoms the following features : (1) The disease began when the patient was two years old—the youngest case on record ; (2) it has lasted for more than eleven years ; (3) carcinomatous degeneration of internal organs is absent, the general health being good ; (4) all characteristic symptoms of the disease were developed, and, simultaneously with the hypertrophy of the skin, atrophy of the pigment, vitiligo, and atrophy of the papillæ could be noticed ; and (5) itching was present. The writer gives a full description of the clinical aspects of the disease, its skin and general symptoms, which he gathered from a careful study of the twenty-two cases already published.

Crocker¹ presented a case of this disease before the London Dermatological Society, in a man of fifty years, in whom, also, so far as it could be discovered, there was no visceral disease. It had begun four months previously, with the sudden appearance of common warts upon the backs of the hands and wrists, immediately followed by symptoms in the mouth, and the neck, groins, and axillæ were all rapidly involved. There was brownish discoloration of the neck, and some grayish-black pigmentation in the axillæ and groins, but nowhere else, and on the whole the pigmentation was much less than usual. There was palmar and plantar keratosis. Nearly the whole of the oral mucous membrane was finely granular ; the tongue also presented a bluish-white coating like luminous paint. There were numerous common warts on the backs of the hands and forearms and just beyond the axillæ and groins ; in the last two places there were the usual hypertrophic folds. With the exception of a few warts, the scalp and face were free. The general health was quite good, although the patient thought he had become a little thinner.

It will be observed that in the six cases here referred to Darier's belief in its relationship to malignant disease in the abdominal cavity is apparently not substantiated except in one instance.

Scleroderma. An interesting paper on scleroderma is contributed by Osler,² who reports eight cases. An associated arthritis was noted in three of these cases, in two marked vasomotor changes in the extremities, in one pulmonary tuberculosis, and in one intense general pigmentation, with leucodermic areas. Graves' disease preceded the integumentary changes in one case.

One of Dercum's³ cases also illustrates the not uncommon association of arthritis, in this instance as extreme rheumatoid arthritis.

That the nervous system is probably the important etiological factor is shown by the various symptoms : loss of pigment, increased pigmentation

¹ British Journal of Dermatology, March, 1899.

² Journal of Cutaneous and Genito-Urinary Diseases, February and March, 1898.

³ Journal of Nervous and Mental Diseases, October, 1898.

tion, ulcers, etc. Thus Alpár¹ showed a case of universal scleroderma in a woman, aged sixty-two years, of rapid development (six months), which, diffused for the most part, also exhibited circumscribed patches and band-like areas on the upper extremities and neck, and painful superficial ulcers on several regions, which, occurring so soon after the beginning of the disease, the writer thought pointed to a trophoneurotic cause.

Dercum² calls attention to the fact that other tissues than the skin may be involved. In one of the cases reported by him the teeth of the upper jaw loosened and came out, ulceration took place over the olecranon, and trophic changes, in the form of small ulcers, appeared at the ends of the fingers.

Jacoby³ reports a case in which the disease began in the form of open sores, occurring successively on the tips of different fingers.

As still further showing nerve relationship, Anderson⁴ presented before the London Dermatological Society an interesting case affecting the whole distribution of the right fifth nerve. The three divisions of the nerve were affected, and the alterative changes were not only integumentary, but also involved the mucous membranes supplied by this nerve. There was also falling of the hair on the side affected as high up as the middle of the vertex.

In Colcott Fox's⁵ case of multiple circumscribed scleroderma, or morphea, in a girl of seven years, some of the patches were of ivory whiteness, surrounded immediately by a darkly pigmented zone and with a good deal of diffuse, slighter pigmentation beyond; except for the structural alteration there was a strong resemblance to leucoderma.

Marty⁶ records a curious beginning in a case of this disease: A soldier was received at the hospital with a large erythematous, somewhat fluctuating plaque on the posterior aspect of the thigh; this was incised and a seropurulent fluid discharged, the wound healing slowly. At the same time there was a non-inflammatory sclerodermic area in the sternomastoid region, from which the disease gradually invaded a greater part of the surface.

It is maintained by many observers that morphea and scleroderma are two distinct affections, although opinion is gaining ground that they are one and the same disease. Crocker⁷ showed a case before the Dermatological Society of Great Britain and Ireland in which this association of the morphea patch and sclerodermic areas was noted, and

¹ Monatshefte für praktische Dermatologie, August 15, 1898.

² Loc. cit.

³ Philadelphia Medical Journal, April 15, 1899.

⁴ British Journal of Dermatology, February, 1899.

⁵ Ibid., November, 1898.

⁶ Annales de Dermatologie et de Syphiligraphie, 1898, No. 12.

⁷ British Journal of Dermatology, January, 1899.

believes that such cases go far to prove that the superficial morphœa and deep scleroderma are but variants of the same process.

In most instances the earliest noticeable symptom is one of tension or slight hardness. In Mosler's¹ case, more or less generalized, and in a woman, the earliest stage seemed to be a peculiar reddish-blue discoloration of the skin. This writer, with the majority of other observers, believes the disease to be a neurosis, and the various pigment changes to be due to consecutive dilatation of the vessels and escape of the red blood-corpuscles.

It is common observation that generalized cases are to be looked upon as possibly of grave import, although, according to my experience, many cases finally recover. This is also the experience of others. Meneau² states that in his experience the progressive form of scleroderma, invariably attacking the extremities first and then extending to other parts, begins insidiously, advances steadily, and is generally fatal.

TREATMENT. Osler³ tried thyroid-gland extract in six of his cases, continued over a period in some of these cases of over a year. The result was not encouraging; in two cases the disease did not progress, but the cutaneous conditions were uninfluenced in all. Pringle⁴ thought he saw favorable influence in one case from this treatment.

Brocq⁵ claims favorable action in the circumscribed or limited forms of plaques and bands from electrolysis, employed in the same manner as in the removal of superfluous hairs. Current strength should vary between one-half and ten milliamperes, according to the patient's sensitiveness and the character of the integumentary conditions; the greater the infiltration the stronger should be the current, if the patient bears it. The amount of infiltration also guides the duration of the application. Brocq observed improvement after a few séances. Conjointly with this he advises the application of mercurial plaster, which must, I think, be entitled to some credit for the improvement which takes place. His opinion as to this method is based upon an observation of eight cases. Allen⁶ also indorses this treatment; he observed favorable influence in a case of circumscribed scleroderma (morphœa) on the chin and face. The application was made every five to seven days.

In Marty's⁷ case, referred to, some retrogressive changes ensued from the administration of potassium iodide, but the disease subsequently persisted.

¹ *Deutsche medicinische Wochenschrift*, 1898, No. 28.

² *Journal des Maladies Cutanées et Syphilitiques*, March, 1898.

³ *Loc. cit.*

⁴ *British Journal of Dermatology*, March, 1898.

⁵ *Annales de Dermatologie et de Syphiliographie*, 1898, No. 2.

⁶ *Journal of Cutaneous and Genito-Urinary Diseases*, January, 1899.

⁷ *Loc. cit.*

Mosler¹ cured one case with sodium salicylate and cod-liver oil. He also advises the external and internal use of ichthyol, as suggested by Schulz, who believes that sulphur has some action in anæmic and vasomotor neuroses.

Weber and Krieg report improvement in a case of a child, aged twelve years, from massaging with an ointment—a boric acid ointment. The disease in this case had begun when the child was six years old.

Sternthal² secured recovery in a severe case, in a young girl of fifteen years, by treatment with massage, sea-bathing, and ferruginous tonics.

Tattoo-marks. It is common experience that tattoo-marks are more easily made than removed. The glycerole of papain, suggested by Ohmann-Dumesnil a few years ago, is the latest agent advised for the removal of these blemishes, although others, including myself, have failed to get the results claimed. It is possible, of course, that the operator may be at fault. Skillern³ has recently reported favorably on this remedy, and, as success may depend upon the technique, I quote his words:

“The technique of the operation is extremely simple, and a large area may be gone over in one sitting. As asepsis plays an important rôle in the result of this operation, the parts should be prepared in the ordinary manner as for any surgical operation—viz., shave the part, if necessary; wash with soap and water, alcohol, and lastly mercuric chloride, 1 : 1000. The instruments necessary are three or four very fine cambric needles, which may be grasped by a needle-holder and placed side by side in close proximity. These should also be made aseptic. The parts are now anesthetized by a spray of ethyl chloride; this, I think, being better than hypodermatics of cocaine, because it is not necessary to go deeply into the tissues, and the area to be operated on will in all probability be greater than even two or three hypodermatics of cocaine would cover. Enough glycerole of papain is poured on the skin to cover those parts of the marks to be operated on. This is now worked into the tattoo-marks by pricking with the needles, and should only go deep enough to draw a small quantity of blood. The marks should be gone over several times, going well to the outside to make sure all parts have been reached, followed by a dressing of glycerole of papain, gauze, and adhesive plaster. This dressing should be allowed to remain undisturbed for two or three days, and at the end of which time the parts should be examined. After the dressing has been removed the marks will be found, on superficial examination, not to be much changed, and there will be a slight area of inflammation where the needles have been introduced. On closer examination small portions of the marks will be noted as beginning to

¹ Loc. cit.

² Archiv für Dermatologie und Syphilis, May, 1898.

³ Philadelphia Medical Journal, June 18, 1898.

disappear; the surface should again be covered with a strip of adhesive plaster and examined two or three days later. The marks will then be obviously disappearing, the skin presenting a hazy blue color, but in no portion can the marks be made out distinctly. The surface is slightly raised, much resembling a superficial burn. In a few days crusts will form where the needles have penetrated the skin, and when these fall off the marks will have for the most part disappeared. In some cases in which the marks are very dense it is necessary to go over the parts twice, the second time usually removing them completely."

Hypertrichosis. The treatment of superfluous hair concerns especially the growth as observed in women. Electrolysis is so far the sole permanent method, and the procedure is fairly well understood. Jackson¹ reiterates briefly and clearly the technique of the operation. His comments as to scarring accord with my own experience: "If care is taken not to use high currents for too long a time, not to enter a follicle for the second time at any one sitting (and there is sometimes a temptation to do this when the needle has slipped out of the follicle before the hair-papilla has been destroyed), and not to remove the hairs in close proximity at the same sitting, there will be little danger of scarring." I can also agree with the advantage accruing from disinfecting the parts to be operated on in preventing the formation of pustules subsequently.

As a rule, depilatories are not to be advised, but they have their proper field of usefulness. Brayton² lauds highly one of dry calcium sulphohydrate, made by heating together at a high temperature plaster-of-Paris and granulated wood-charcoal. The product is a whitish or rose-colored powder, which is made into a paste with water at the time of application; the odor of hydrogen sulphide is given off.

The X-ray has also been called into service in the treatment of excessive hair growth. Schiff and Freund³ have employed this method with alleged favorable results. To lessen the possibility of inflammatory action, they advise a current strength of not over two ampères, and not over eleven and one-half volts, and that the light be placed at least eight to ten inches distant from the skin. A sitting should not exceed ten minutes. Seventeen to thirty applications of short duration gave results in seven cases. In several brunettes the hair became white before it began to fall out. Below⁴ also tried this method in a young woman, and after a sitting at close proximity saw an erysipelatous inflammation ensue, followed by a purulent crust; fourteen days elapsed before the normal condition was re-established.

¹ New York Medical Record, June 4, 1898.

² Journal of the American Medical Association, April, 16, 1898.

³ Wiener med. Wochenschrift, 1898, Nos. 22, 23 and 24.

⁴ Münch. med. Wochenschrift, 1898, No. 9.

It is extremely difficult, I think, to get permanent results with this method without destroying the skin itself; permanent removal of hair requires a destruction of the hair papillæ. It is hardly likely that the X-ray is elective in its action. It is, moreover, a dangerous procedure for a harmless disfigurement.

ATROPHIES.

Alopecia Areata. It is beginning to be the general opinion that patches of baldness may be due to several causes—the principal factor being either neurotic influence or the presence of parasites. The not infrequent association of leucodermic areas with this disease seems to point to a nervous cause. Eddowes¹ and Crocker² refer to such instances. The former presented before the London Dermatological Association a boy with such association, bald areas upon the scalp and some leucodermic spots on the legs. He believes, as Thibierge pointed out, that in such cases the disease is extremely obstinate. In discussing this case Crocker referred to an example bearing strongly upon nerve influence, in which a female child sleeping suddenly awakened and found a cat sitting upon her, which caused severe fright. She became totally bald and developed also leucoderma. It is true, as Crocker remarked, that in these sudden neurotic cases of extensive baldness the prognosis is almost always unfavorable. As a possible example of nerve influence, too, the case reported by Bender³ seems pertinent. His patient was a male adult, with a dollar-sized patch on the left side of the scalp posteriorly, which had existed since childhood, appearing after an operation on glands of the neck. There had never been a regrowth; at times downy hairs appear, but soon fall out.

Cases indicative of contagiousness, and, hence, parasitic in origin, are multiplying. Plonski⁴ discusses the transmissibility of this disease, and refers to two instances in support of this belief. In one instance the subjects of the bald areas were two sisters, both under ten years of age; in the older the disease dating back a year, and in the younger of six months' duration. The other instance concerned a brother and sister. The boy had a rather extensive alopecia areata, and subsequently his sister developed an area upon the vertex. I have recently met with similar experiences, but, fortunately, such examples are not common.

TREATMENT. Extensive alopecia areata, undergoing recovery by treatment with pilocarpin, is reported by Pringle.⁵ In this case it con-

¹ British Journal of Dermatology, December, 1898.

² Ibid.

³ Dermatologische Centralblatt, October, 1898.

⁴ Dermatologische Zeitschrift, 1898, vol. v., No. 3.

⁵ British Journal of Dermatology, June, 1898.

cerned a German waiter, aged twenty-seven years. The disease began as an ordinary alopecia areata. When he came under observation there was absolute alopecia of the entire scalp. A hypodermatic injection of one-sixth of a grain of pilocarpin nitrate into the scalp was administered daily. Within a week a copious growth of down appeared, gradually extending over the entire region. The dose was slowly increased to one-third of a grain. Progress was still going on toward recovery. Pringle stated that he had had several successful results with this treatment, the most conspicuous of which was in an old woman of over sixty years, who became perfectly bald after influenza. After a month of pilocarpin treatment she had a considerable growth, which steadily progressed. Morris¹ had treated a number of cases with this method, and in only two had he seen satisfactory results. He regarded the treatment fraught with danger and had abandoned its use, a conclusion I believe judicious in slight cases, but in extensive, persistent examples a drug if at all promising should not be hastily cast aside; pilocarpin used cautiously is practically without serious danger.

The *local treatment* of alopecia areata is conceded by all to be of importance, whatever may have been the cause of the disease. Stimulating applications are serviceable, and many such have been extolled. Thus MacGowan² speaks well of trikresol. He applies it once every five or six days, rubbing it in gently, a fraction of an inch beyond the borders. It may be used pure. To patches on the bearded region it should be weakened with an equal part of alcohol. It causes immediately a burning pain which is readily borne even by a child. The skin turns white, followed in a few hours by hyperæmia. A dry, brownish, crusty scale forms, falling off in from four to ten days, when a new application is made; the remedy should be applied less energetically, as the skin is now more sensitive. MacGowan has never seen it cause a slough or scar, and considers it superior to carbolic acid and much safer. He reports nine cases, the youngest of which was aged twelve years.

Somewhat similar in its power of producing irritation is lactic acid, commended by Rietema,³ who applied it cautiously in gradually increasing strength, beginning with a 50 per cent. solution. Jaquet⁴ advocates a simple plan of local stimulation in this disease, and with successful results. He experimented first on himself, having a quarter-dollar-sized patch in the beard. He used a brush of hog bristles, made properly

¹ British Journal of Dermatology, June, 1898.

Journal of Cutaneous and Genito-Urinary Diseases, May, 1899.

² Report of Dermatological Society of the Netherlands, in British Journal of Dermatology, July, 1898.

³ Bulletin de la Société Française de Dermatologie et de Syphiligraphie, December, 1898.

aseptic before each application. This is rubbed and pressed in repeatedly and frequently until considerable redness and irritation ensue. He has found that the results come as quickly as by any other method.

NEW GROWTHS.

Keloid. The pathogenesis of keloid is again the subject of study, this time by Wilms.¹ His investigations show that it is an outgrowth of connective tissue, and is, therefore, in reality a fibromatous growth, and that the tendency to limitation of the tumor is in all probability due to the great development of the collagenous material. This enormous collagenous development, he believes, retards further growth by shutting off the nutritive supply.

TREATMENT of a new or modified character of keloid growths is touched upon by Lawrence,² and Balzer and Mousseaux.³ The plan which Lawrence suggests is that of cross linear scarification with subsequent pressure. He refers to a case of keloid, three inches long, with the usual claw-like processes, and somewhat painful, which had been twice excised. Finally, the growth was scarified with a five-bladed scarifier, the blades being one-twentieth of an inch apart. The tumor and adjacent skin were thoroughly minced, and the bleeding encouraged by hot boric acid fomentations. Iodoform was then dusted over, and the parts put under moderated pressure by placing on large rubber tubing and fastening with adhesive strips. Pressure was continued for some weeks. Pain disappeared and the result was successful. The plan adopted by Balzer and Mousseaux, previously suggested by Marie, consisted in making repeated injections into the growth of a 20 per cent. solution of creosote in olive oil; almost complete destruction of the tumor ensued, and without damage to the surrounding tissues.

Rhinoscleroma. While this disease may gradually extend from the nose and involve contiguous parts, it is a new observation, made by Heerman,⁴ that it may arise in near-by places independently of extension. In one of his two cases reported there was a tumor in the subglottic region which interfered with breathing. On removal and examination by the microscope the characteristic appearances of rhinoscleroma and the usual bacilli were found.

Xanthoma. The so-called glycosuric xanthoma (xanthoma glycosuricum) has been referred to in a paper by Schwenter-Trachsler.⁵

¹ Beiträge zur klinische Chirurgie, February, 1899.

² British Medical Journal, July 16, 1898.

³ Bulletin de la Société Française de Dermatologie et de Syphiligraphie, December, 1898.

⁴ Deutsche medicinische Wochenschrift, June 2, 1898.

⁵ Monatshefte für praktische Dermatologie, 1898, vol. xxvii., No. 5.

According to this writer's observations and studies the disease is most common in stout and corpulent people, more frequently in the male sex, and at about the middle period of life. Barring the cutaneous lesions and the presence of sugar in the urine, these persons seem otherwise healthy. Icterus has no etiological bearing on this variety. As to the lesions, which vary in size from pin-head to pea, and are firm and well embedded in the skin, some may be simply red papules, others show a reddish base and yellowish summit. They are apt to be persistent, lasting months or years. Almost any part of the surface may be the seat of lesions, but the extremities are most frequently and numerous invaded. When the lesions are numerous it has been noted that they tend to coalesce; this has been especially observed about the elbows. The prognosis is favorable under treatment, although the disease may again present itself, depending upon the associated glycosuria.

Abraham¹ refers to a case in which nearly all the lesions had disappeared, as the patient's underlying general condition was improved with tonics of iron and nux vomica and codeia; some of the lesions left brown marks.

A marked example of the more ordinary form of xanthoma is referred to by Colcott Fox.² In this case—xanthoma multiplex—the disease was almost universal, and was associated, as is not infrequently noted, with chronic jaundice. The cause of this jaundice could not be made out clearly, but the liver was greatly enlarged, and its contour suggested secondary malignant disease.

TREATMENT. In the treatment of the not uncommon xanthomatous patches about the eyes, McGuire³ has had good success with applications of monochloroacetic acid. The method is painless, although at times attended with considerable swelling; this, however, soon subsides. It is to be applied to a small part only at one time; shortly afterward the growth, at the point of application, turns white, but this is soon followed by the formation of a dark crust. This crust is permitted to separate spontaneously. The part eventually is noted to be a trifle lighter in color than the surrounding skin. This method proved successful in one case in which electrolysis had failed to have any influence.

Lupus Erythematosus. During the past year the nature and treatment of lupus erythematosus have received considerable attention, being the subject of discussion⁴ at the meeting of the American Dermatological Association, in June, and in the Section of Dermatology of the British Medical Association,⁵ in July. The essence of the discussion on etiology

¹ British Journal of Dermatology, March, 1898.

² Ibid., November, 1898.

³ Journal of Cutaneous and Genito-Urinary Diseases, July, 1898.

⁴ Ibid., September, 1898.

⁵ British Medical Journal, September 10, 1898; British Journal of Dermatology, October, 1898; Journal of Cutaneous and Genito-Urinary Diseases, October, 1898.

and pathology was as to its relationship to tuberculosis. The histological studies are, it must be said, not confirmatory of this view. In no instance, so far as I can recall, excepting Hardaway's case, to be referred to, have any tubercle bacilli been found. Robinson's¹ belief, based upon his own elaborate investigations and an exhaustive study of the literature, indicates that the disease is probably a chronic infective process with organisms at the seat of the lesions—a local infective granuloma; but that from histological and etiological stand-points it could not be considered a local tuberculosis. Hardaway² believes that there are several disorders which have been included under this name, and that one type—the so-called fixed lupus erythematosus—is probably a form of cutaneous tuberculosis. He referred to a case which appeared to simulate lupus erythematosus and the erythematoïd lupus vulgaris of Leloir. In this case he had failed in many efforts to demonstrate the presence of tuberculous nodules, but he at last succeeded in finding tubercle bacilli. This finding in a case which, as he states, clinically represented lupus erythematosus, and in which, on clinical grounds alone, such diagnosis was inevitable, is of importance.

Coming to the clinical side of this question, it seems to me that the evidence of a relationship, if not conclusive, is surely strongly suggestive. In both meetings of the societies referred to, with few exceptions, the members agreed that its association with tuberculosis in some of its forms was not infrequent; in the experience of many, sufficiently frequent to be more than coincidence, and to point toward close relationship. Many suggestive cases can be quoted in substantiation, although in many instances those reporting these cases did not believe that it had any etiological bearing. Take Fordyce's³ cases; in one case,⁴ a typical lupus erythematosus of the face, the patient died of coma. At the autopsy there were found tubercular areas in both kidneys, and in addition a large tubercle abscess in the right one; microscopic examination showed the typical lesions of tuberculosis. The second case was that of a girl of nineteen years, both of whose parents were phthisical. Fordyce had also observed other cases of lupus erythematosus of the face, with advanced tuberculosis of the lungs, and quoted a case shown by Jackson before the New York Dermatological Association, following tuberculous lymph nodes of the neck. He disclaimed, however, any belief in the relationship, inclining to the opinion that the disease is due to a local thrombosis of capillary vessels previously diseased by cold, rosacea, or seborrhœa, the peripheral extension being explained by the spreading of this process in the capillaries; in other cases the passage of toxins through the vessels might develop a local thrombosis.

¹ Journal of Cutaneous and Genito-Urinary Diseases, September, 1898.

² Ibid.

³ Ibid.

⁴ Ibid., March, 1899.

Zeisler's¹ experience had impressed upon him a belief in the parasitic nature of the disease, although admitting that in some cases the connection with tuberculosis seemed very suggestive. Duhring's² observations had seemed to show no connection with tuberculosis, but he had occasionally seen the disease occur in what he took to be tuberculous subjects.

Boven³ had met with two cases in which tuberculosis was present; in both, pulmonary tuberculosis.

The probable tuberculous character of the disease, based, however, upon clinical observations, is materially strengthened by the strong array of evidence presented by Boeck.⁴ This observer's experience accords with the views previously advanced by Hutchinson (London), Besnier, Hallopeau,⁵ and others of the French school. As it is the strongest clinical presentation yet made, I give it at more or less length. Boeck states that out of forty-two common discoid cases in adults, of which thirty-five were females and seven males, in twenty-eight were to be found present or past evidences of tuberculosis. Eight presented traces of scrofulous affections of the cornea, and two had been operated upon for tubercular disease of the bones. In three cases of the disease in children all were tuberculous. He refers also to Kaposi's eleven cases of generalized lupus erythematosus, six ending fatally, three dying of acute tuberculosis, and three of pleuropneumonia. His own fatal case died of tuberculosis. Its connection, also, in some instances with other tuberculous dermatoses had been recognized by Hutchinson and others. Bacilli, it is true, as Boeck states, have as yet not been found.

If Hardaway's⁶ case is to be accepted as one of lupus erythematosus, Boeck's position will be materially strengthened. Boeck is strongly of the opinion that the disease is of toxic origin (tubercle bacilli toxins), clinically evidenced by hyperemia and vasomotor disturbances, followed by intoxication of endothelia and connective tissue. His conclusions are as follows:

1. Lupus erythematosus is always, and in all its forms, an eruptive inflammatory disease, of which the special localizations are determined by the vasomotor centres of the skin.

2. It is never a merely local process, local irritation by heat, cold, drugs, etc., playing only an accidental part by bringing the vasomotor mechanism into play.

3. Considering the very frequent coexistence of lupus erythematosus and tuberculosis, it must be concluded that the latter infective process plays an important rôle in the etiology of the skin affection,

¹ Journal of Cutaneous and Genito-Urinary Diseases, March, 1899.

² Ibid.

³ Ibid.

⁴ British Journal of Dermatology, October, 1898; British Medical Journal, September 10, 1898.

⁵ La Semaine Medicale, 1898, No. 18.

⁶ Loc. cit.

and is probably its real and essential cause. The fact, also, that all forms of lupus erythematosus are not infrequently combined with other skin affections, whose dependence upon tuberculosis is beyond doubt, is an additional argument in favor of the tuberculous origin of lupus erythematosus.

4. As tubercle bacilli cannot be proved to be present in the affected skin, it is probable that the inflammation is brought about through the toxins of the bacillus, which act, in the first place, on the vasomotor centres of the skin, and in the second place on the parts of the skin in which the vasomotor disturbances are set up.

5. The main anatomico-pathological changes are vasomotor dilatation of vessels, secondary intoxication of the tissue cells, and inflammation, the whole resulting very often in atrophy, rarely in necrosis.

Hallopeau's¹ views are just as forcibly presented, and agree essentially with those of Boeck.

This strong exposition of the tuberculous aspect of the disease is not, however, largely shared by the British dermatologists, although Crocker admits the undoubted frequency of the disease in those of tuberculous family history. Jamieson, however, subscribed to it some time ago, advancing the theory of the tuberculous invasion of nerve endings, a view opposed, with some reason, I think, by Boeck, who rightly says that such a view is negated by the distribution of the disease and the absence of other nervous symptoms. My own cases, judged from a clinical standpoint, have been gradually impressing upon me, by the not infrequent occurrence of tuberculosis of the lungs and by a tuberculous family history, an increasing belief in the tuberculous nature of the disease. Cases, too, are occasionally met with in which it is difficult to say whether the disease is lupus erythematosus or lupus vulgaris, showing a suggestive clinical resemblance.

It may be truly said, therefore, that the past year has added materially in advancing a belief in the tuberculous character of this disease.

TREATMENT. In the management of this disease there is some divergence of views as to curability but a general agreement as to methods of treatment. It is the experience of all that in a given case a positive assurance of cure cannot be vouchsafed. On the other hand, cases are extremely rare that do not respond at all. White² has given an elaborate résumé of the large number of remedies used from time to time in this disease. The principles of constitutional treatment are, briefly stated, that the patient's health is to be looked after with appropriate remedies, there being no drugs which exert a specific influence. My own experience coincides in this respect with that of Dr. White, but others

¹ Loc. cit.

² Journal of Cutaneous and Genito-Urinary Diseases, October, 1898.

hold different views. Unna,¹ although acknowledging that it is doubtful whether the disease has ever been cured by any internal remedy alone, states that of the remedies which have a favorable influence upon the injurious vasomotor paresis of the face, he has seen good results from ammonium carbonate, ichthyol, and sodium salicylate, and of those to which a not easily definable specific action has been attributed, he has observed a favorable influence from tuberculin. Eddowes,² Payne,³ and Crocker⁴ had all seen a beneficial effect, especially in the markedly inflammatory type, from large doses of quinine; and the last named highly indorsed salicin, and, to a less extent, ichthyol.

Hallopeau⁵ has observed several persistent and obstinate cases recover after an attack of erysipelas, and in cases proving rebellious, he considers recourse to the production of this latter disease, by inoculation, justifiable. In the discussion at the meeting of the American Dermatological Association,⁶ practically no stress was placed on internal medication, the Association evidently negatively assenting to Dr. White's belief.

As to local treatment, White's views may also be said, though somewhat too pessimistic, to reflect in the main those of his associates. He stated that after forty years' experience he still held a wellnigh hopeless opinion regarding the curability of the disease. He did not believe that it could be positively predicted that under the influence of any known drug a cure could be effected, and the number of complete and permanent cures that he had effected was, he stated, sadly small. As to the principles of external treatment, the case presenting an inflammatory type, the most soothing applications should alone be used at first, and they are appropriate from time to time in every case, to meet conditions of hyperæmia. In cases of the acute multiple type these milder measures are all that the skin will tolerate. He derived far more benefit, in the long run, from soothing applications—*c. g.*, black wash, zinc oxide, calamine washes, and zinc paste. Among the more stimulating preparations were to be mentioned sulphur ointment, zinc oxide, sulphur wash, white precipitate ointment, and lactic acid. Later on, when the milder applications had failed to act, iodoglycerin (iodine, potassium iodide, $\text{ãã } 5j$; glycerin, 5iv) and mercurial plaster had in his hands proved beneficial. Creosote, carbolic acid, pyrogallie acid, chrysarobin and other remedies of this class were the most severe that he used. He had attempted in two cases to annihilate certain areas on the trunk with fuming nitric acid, but had seen the disease recur beyond the areas so treated.

¹ *Journal of Cutaneous and Genito-Urinary Diseases*, October, 1898.

² *British Journal of Dermatology*, October, 1898; *Journal of Cutaneous and Genito-Urinary Diseases*, October, 1898.

³ *Ibid.*

⁴ *Ibid.*

⁵ *Loc. cit.*

⁶ *Loc. cit.*

Unna's¹ observations as regards local treatment have a somewhat more favorable tone, although the plans are essentially mild in character. He believes histology gives sufficient basis for treatment. As he states, the most striking feature in a patch of the disease is the contrast between the condition of the epidermis and the cutis proper. The former is dry, with horny processes dipping deeply down from its lower surface; whereas the cutis is seen to be succulent and boggy, owing to the dilatation of its lymph spaces and canalization of the collagenous tissue. These being the conditions recognized by him, he has been led to employ desiccating and compressing remedies. Among the most valuable of the former are powder of zinc oxide, calamine, terra silicea, carbonate and silicate of magnesium, pastes of zinc and sulphur, washes of lead-water and lime-water, with zinc oxide. Of the compressing remedies, the most favorably mentioned are, for the indolent cases, collodion with 10 to 20 per cent. of *sapo viridis*, and collodion with 10 per cent. each of *sapo viridis* and salicylic acid; for the more irritable cases, collodion with 10 per cent. of ichthylol. Gelanthum, with the same medications, is similar to but less compressive than collodion, but as it may be readily washed off it has some advantages. He finds also that antihyperemic applications are beneficial, such as plaster-mulls or pastes of pyroloxin, of oxide of chrysarobin, and moist alkaline dressings. The stronger remedies he rarely uses.

In the discussion at the meeting of the American Dermatological Association² the treatment advocated by Schütz, of painting the patches with a weak solution of arsenic (one part of Fowler's solution to four or five parts of water) for several days until an inflammatory reaction is produced, followed by mild soothing applications, and then repeating, was referred to; but the results were, upon the whole, not encouraging, certainly not striking.

The milder methods have rightly, however, I think, taken the place of the stronger caustic remedies—scarification, curetting, etc.—formerly advocated, although the weaker of these—carbolic acid, resorcin, and electrolysis—may be used in persistent circumscribed patches.

In a few cases, it must be admitted, the disease seems to yield to simple measures. Hebra³ claims good results from cooling applications. He has had success with alcohol alone and with a mixture of equal parts of alcohol, ether, and spirits of mint. The application should be made at short intervals, the more frequently the better. Hebra believes the good effect to be due to the cold produced and to the withdrawal of the

¹ *British Journal of Dermatology*, October, 1898; *Journal of Cutaneous and Genito-Urinary Diseases*, October, 1898.

² *Loc cit.*

³ *Wiener medicinische Wochenschrift*, 1899, No. 1.

water of the tissues by the alcohol, bringing about contraction of the vessels and gradual disappearance of the diseased areas. During this treatment he advises against the use of soap.

Tuberculosis. This subject is, indeed, a broad one, the yearly literature being usually enormous. The gravity of the disease, whether internal or integumentary, is gradually gaining the recognition it deserves. Its dangers to civilized and hygienic communities is in reality much greater than is that from leprosy, and yet the indifference exhibited toward the presence of hundreds of cases of the former disease is in striking contrast to the hysterical clamor produced by the discovery of a single leper in our midst. Fortunately, prophylaxis and management of general tuberculosis are showing results, and this must, I believe, be followed measurably by diminution of other manifestations due to the same cause—the tubercle bacillus.

Interesting to note in this connection is the statement urged by Sticker,¹ that in lupus, as well as in leprosy, the primary lesion is in the nose, a point worthy of further investigation. There are, doubtless, many ways for the bacillus to find its way to the cutaneous tissues. For instance, while vaccination is wrongly held responsible for many evils, of which it is usually guiltless, yet the caution necessary even in such procedures is shown by the occasional tuberculous inoculation, another probable case of which is reported by Perry.²

Ware³ also calls attention to the inoculation possibilities in his report of a case in which tubercular inoculation followed the performance of ritual circumcision, an ulcer presenting at the site of the wound, with subsequent lymphangitis along the dorsum of the organ, and tuberculous buboes in the adjacent glands. These cases, as Ware remarks, are always serious, and not infrequently fatal. For this reason especially an early diagnosis is of great importance, an examination being made of excised tissue from the diseased area for confirmation. A mistake in regarding such cases as syphilis is not uncommon, and much valuable time is thereby often lost. So far, according to this writer, there is a record in literature of twenty-one cases similarly inoculated with tuberculosis.

This same danger of inoculation of the cutaneous tissues by tubercle bacilli, now recognized, is emphasized, in my opinion, by the frequency of tuberculosis verrucosa on the back of the hand in the course of pulmonary phthisis, to which Bécélère⁴ refers in a recent communication. Four cases are reported from the writer's observation, and he states that it is almost always seen on this region, especially the thumb and fore-

¹ *Dermatologische Zeitschrift*, 1898, Band v., Heft 6.

² *British Journal of Dermatology*, June, 1898.

³ *New York Medical Journal*, February 26, 1898.

⁴ *Annales de Dermatologie et de Syphiliographie*, August-September, 1898.

finger. He agrees with the explanation given previously by Vidal, who considered it due to the fact that after coughing it is not uncommon for such patients, especially men in whom this cutaneous tuberculosis is usually seen, to wipe off the mouth with the back of the hand.

The disease in tuberculosis verrucosa cutis is usually somewhat limited in character, and, as already remarked, has certain favored locations. In both these respects the case reported by Cutler¹ is deserving of brief reference. The patient was a man, aged sixty-two years, a shoemaker by occupation, in whom both the backs and palms of the hands were the seat of numerous small warty tumors, dusty red in color, sensitive to the touch, bleeding at times, and some of them presenting points of suppuration. The disease had begun eight years previously as a few small growths on the finger. Doubtless, as stated, the man's occupation had a determining influence in the implication of the palms.

This manifestation, like many of the manifestations of cutaneous tuberculosis, is essentially slow and chronic, as in the case Weber² presented to the London Dermatological Society, involving the right hand, of eighteen years' duration. This patient, aged forty-one years, was also a shoemaker by trade, and the disease involved also the palms. There had been during the past year throat (laryngeal) symptoms, and signs of pulmonary disease at the apices. The case was confirmed by the tuberculin test, and bacilli were found in the sputa. This disease may also be encountered in advancing years, as in Crocker's³ case; the back of the hand, in a woman, aged seventy years, was affected, and was of fourteen years' development.

The invasion of the cutaneous tissues is not, however, always slow in character. Pelagatti⁴ describes an interesting case of acute miliary tuberculosis of the skin in a child two years old. The eruption was made up of recent pin-head-sized papules, somewhat older hemp-seed-sized papules, both covered centrally with a scaly crust, and ulcerated lentil-sized papules. The lesions were seated on the regions of the loins, buttocks, thighs, and legs; were somewhat elevated, without areola, and were pale yellow in color. Tubercle bacilli could be found in numbers. The child died of tuberculosis of the lungs and intestinal tract. A somewhat similar case is described by Meneau,⁵ observed in a girl, aged nine years.

Colcott Fox⁶ presented a case before the Dermatological Society of London which is of interest. The child was aged twenty-one months,

¹ New York Dermatological Society Transactions in *Journal of Cutaneous and Genito-Urinary Diseases*, November, 1898.

² *British Journal of Dermatology*, 1899, vol. xi., No. 4.

³ *Ibid.*

⁴ *Giornale Italiano delle Malattie Veneree e della Pelle*, 1898, No. 6.

⁵ *Journal des Maladies Cutanées et Syphilitiques*, 1898, No. 10.

⁶ *British Journal of Dermatology*, July, 1898.

had suffered from measles nine months previously, and then subsequently chicken-pox. The present eruption soon followed, and was of about eight months' standing. The lesions were indolent, persistent, of a dull brownish-red hue, and were mostly to be described as acneiform, consisting of acuminated papules developed around a follicle, and showing a central punctum, as in *acne scrofulosorum*. On the backs of the hands were a few larger pea-sized nodules without the central punctum. There were no scars. The mother stated that the child's health was good, but there was night-sweating. Fox had some doubt as to whether the case was one of *acne scrofulosorum* or *miliary exanthematic tuberculosis*, but had finally accepted the latter, as it is unusual for the individual lesions of *acne scrofulosorum* to persist so many months and to be without the true pustular summits commonly observed in that disease.

It is possible that in Fox's case the association of an attack of measles was purely coincidental, but this sequence has been observed in other instances. Haushalter,¹ Du Castel,² and Adamson³ have added to the cases of cutaneous tuberculosis following this exanthem. The subject is an interesting one, and if it is true that this disease is a predisposing factor it is really difficult of explanation. The eruption is usually brownish, more or less disseminated, having in some instances (Du Castel) the aspect of flat *lupus vulgaris* nodules; in others (Haushalter) resembling *lichen scrofulosorum*, or actually partaking of the nature of this latter; and in other cases (Adamson) some of the lesions display a warty tendency. The eruption is usually seen on the face, legs, and arms; the trunk is rarely involved, to any marked degree at least. The lesions vary in size from a small papule to small patches a fraction of an inch in diameter. They may undergo resolution or remain more or less persistently; scars may or may not follow. Other symptoms of a tuberculous nature are usually associated. Those variously noted in the cases here referred to were "cold abscesses," chronic otitis, glandular enlargements and tubercular gummata, hip-joint disease, etc. Inoculation experiments (Haushalter) on guinea-pigs gave positive results, producing tuberculosis. The larger patches usually result from a close aggregation or confluence of several of the smaller nodular lesions. As a rule there are no subjective symptoms.

The association of various symptoms of tuberculosis along with the cutaneous lesions is not infrequent; in fact, it may be said to be the rule, and, indeed, the eruption itself may represent several different manifestations, as in the case reported by Brousse and Ardin-Delteil.⁴ In this

¹ *Annales de Dermatologie et de Syphiliographie*, May, 1898.

² *Ibid.*, August-September.

³ *British Journal of Dermatology*, January, 1899.

⁴ *La Presse Médicale*, 1898, No. 32.

patient, a girl of sixteen years, the cutaneous lesions followed a disease of the bone of the right big toe when four years of age, and consisted of a tuberculosis verrucosa cutis of the right foot and leg, with elephantiasic enlargement, an area of lupus vulgaris in the left cheek, and a tuberculous gumma of the side of the face.

Pringle's¹ case of acneiform tuberculide is out of the usual, inasmuch as the patient, a girl of twenty-one years, plump, but with a history of tuberculosis in the family, had had three previous attacks which disappeared—at the age of three years all over the body, at the age of twelve years limited to the left forearm, leaving small scars, and when fifteen the disease reappeared over the arms, head, and trunk. The lesions of the present attack were scanty, were of the usual papulo-pustular type, and were distributed irregularly over the upper limbs and trunk and in the flexures of the elbows grouped concentrically.

A somewhat similar case in a woman, aged forty-six years, under the name of acneiform and necrotic tuberculide, is reported by Balzer and Leroy,² in which the attack was the third, and was limited to the hands, arms, and legs. The patient also had some general symptoms pointing toward tuberculosis.

An extensive case of lichen serofulosorum of two months' duration is reported by Walker,³ in a boy, aged three and a half years, in which the entire body, as well as the face, was involved. The eruption consisted of spots, some arranged in groups, some in circles, some surrounded with an areola. Many were covered with a yellowish scale, others showed upon their summits pustulation. The boy was apparently quite healthy, was not tubercular, and his parents were healthy. Cod-liver oil externally and internally, the usual remedy, proved satisfactory. Morris⁴ also records an extensive case of this manifestation in a young man, aged twenty years, in whom it had appeared six months previously, preceded and accompanied with other strumous conditions. In this case, however, the face—an unusual site—was not affected.

Different varieties of cutaneous tuberculosis naturally differ in their appearances, even materially; the same variety, while usually presenting characteristic features, may occasionally exhibit some variation. Thus Colcott Fox⁵ showed one of the unusual cases of lupus, called by Hutchinson lupus-psoriasis, before the London Dermatological Society. The case is somewhat similar to one observed by myself, and, as Fox states, roughly speaking there is a resemblance both in distribution and appearance, and a hurried observer might readily make a mistake. In this case,

¹ British Journal of Dermatology, March, 1899.

² Bulletin de la Société Française de Dermatologie et de Syphiligraphie, June, 1898.

³ Scottish Medical and Surgical Journal, April, 1898.

⁴ British Journal of Dermatology, September, 1898.

⁵ Ibid.

a girl, aged two years, there were two patches on the left knee and three on the right, three on each buttock, closely symmetrical. There were also one on the point of the left elbow, one on the back of the right heel, and three on the dorsum of the left hand and fingers, one on the back of the right wrist, one on the right thumb, and one on the flexor aspect of the right wrist. This bilateral, and in some measure symmetrical aspect, simulated to a certain extent psoriasis, and the size of the patches on the elbow and knees were strongly suggestive of this latter disease. These lesions differ from psoriasis, however, by the denser infiltration, and stand out well from the skin, being both bolder and more projecting. And usually in one or more lesions, as in the lesions in this case on the hand, there are conditions more or less characteristic of lupus, such as papillary hypertrophy, and sometimes ulceration and scarring.

It is possible that the bacillus plays an important part in some obscure dermatoses, and that its pathogenetic rôle is as yet not fully appreciated. For example, a clinical and bacteriological study by Leredde and Milian¹ of a case of angiokeratoma of Mibelli, involving the lower extremities, seems to justify the conclusion that this is also of tuberculous nature.

The disease described by Bazin under the name *érythéma induré serofuleux* is an affection whose right to a place among the tuberculoses of the skin is questioned. The bacilli, it is true, have not been found, but there are often associated symptoms which are of weight. A case in point is one which Johnston² presented briefly before the New York Dermatological Society: a young woman, with necrotic lesions on the hands and forearm, and lesions of *érythéma induré serofuleux* on the legs, gave a tuberculous history. The glands in the neck were enlarged, and in this region as well as on the legs were numerous scars left by former tuberculous lesions which had broken down. Her lower extremities presented unmistakable signs of the *érythéma induré serofuleux* of Bazin. Johnston referred to the lack of bacillus proof, and stated that he had not been able to find any bacilli in a lesion excised from a similar case. A case in many respects resembling this is also recorded by Du Castel,³ occurring in a woman, aged twenty three years.

As bearing upon the question of the serofulous nature of the *érythéma induré serofuleux*, Audry⁴ has made histological and bacteriological investigations in one case, and concludes there is nothing to substantiate this view. From the histological appearances he believes that the lesion results from a marked spontaneous œdema of the deep cutaneous and subcutaneous tissues, with consequent fatty degeneration. The surround-

¹ *Annales de Dermatologie et de Syphiligraphie*, December, 1898.

² *Journal of Cutaneous and Genito-Urinary Diseases*, July, 1898.

³ *Bulletin de la Société Française de Dermatologie et de Syphiligraphie*, June, 1898.

⁴ *Annales de Dermatologie et de Syphiligraphie*, March, 1898.

ing connective tissue may or may not show slight reactionary symptoms. He believes that the opinion of Hardy, that it is an anomalous chronic, relapsing, and occasionally ulcerative variety of erythema nodosum, is probably correct. The belief that the disease is not tuberculous in origin, either directly due to bacilli or to their toxins, can scarcely be cast aside with one or two examinations, when this view is supported, as it is, by strong clinical evidence; in the several cases under my own observation the distinctly strumous character of the patient, usually with other tuberculous manifestations, was the rule.

TREATMENT. Several papers have appeared during the year bearing upon the value of the new tuberculin—tuberculin R.—in the treatment of cutaneous tuberculosis. The most notable of these were those by Bukovosky,¹ and by Napp and Grouven,² these latter basing their article upon a study of the cases so treated at Doutrelepont's clinic in Bonn. In all there were fifty-nine cases, most of which—fifty-two—represented the disease known clinically as lupus vulgaris. There were also two cases of tuberculosis verrucosa, two cases of scrofuloderma, one of multiple tuberculosis of the skin, and one of tuberculosis of the tongue. In a number of these there were also other tuberculous manifestations, especially pulmonary tuberculosis. It is interesting to note that the systemic reaction was observed in every case. These reactive symptoms lasted, on the average, about a day, and upon the whole, although somewhat variable, seemed independent both of the patient's general health and the amount of the injection. In two cases (Napp and Grouven's cases) there were serious symptoms of collapse without recognizable reason. A local reaction was also observed, and this, too, varied in kind and degree. In some cases there was simply hyperemia involving the affected part; in others moderate inflammatory action with subsequent scaling; in others positive exudation took place, and in some the formation of pustules and blebs. These last subsequently exhibited crusting and superficial ulcerations. The treatment had apparently no influence upon the patients' general condition, although in some cases there was a slight loss in weight.

The beginning dose was $\frac{1}{500}$ milligramme. Quite frequently infiltration was observed at the points of injection, usually slight in character, and disappearing in a few days. Abscesses did not occur. The injection was administered about every second day, except at times when general reaction symptoms had not completely subsided. In many of these cases there was marked improvement—in a few this improvement being so marked as to approach to almost a complete disappearance of the tuberculous disease—in no case, however, was there a positive

¹ Archiv für Dermatologie und Syphilis, 1898, Band xlv., Heft 2.

² Ibid., Band xlv., Heft 3.

cure. In a few instances new foci appeared while the patient was under this treatment. These experiments seem to prove that tuberculin is capable of exerting a favorable influence upon the tuberculous disease, but not of effecting a cure; further, when employed with proper caution, no bad effects on the general system result.

Krzyształowicz's¹ experience with this remedy in thirteen cases led to a similar conclusion. Somewhat more favorable is the experience of Bussenius and Cossmann.² Of eight cases of lupus four were cured; in two of these the disease recurred after some months. In the other cases there was an improvement except in one; in this one the disease was aggravated. These last writers consider it a safe remedy, and one to be tried experimentally in any case.

Adrian's³ experience is, in the main, similar to that of Bukovsky, Napp, and Grouven. No striking result was observed, although he is led to believe it of use combined with local destructive measures, though care should be exercised in its employment. Its use in one of his cases, a case of lupus of the face complicated with chronic nephritis, was not without danger.

Van Hoorn⁴ has had better effects from this new tuberculin than with the old, but calls attention to the fact that in his cases the most favorable influence was exerted during the time between the first dose and the largest dose finally reached; increase beyond a certain dose (20 mg.) fails to hasten the cure, and may even be damaging. He, therefore, advises that this period be lengthened, the dose increase being made more gradual.

It will be observed from these several contributions that the new tuberculin (tuberculin R.) is not without some influence in cutaneous tuberculosis, although not always striking in its effect. The improvement is sometimes decided in the first few weeks of treatment. This effect has been observed by others. Lustgarten,⁵ in a discussion in the New York Dermatological Society, states that in one case in which he employed this remedy the results were encouraging for three weeks, and then the effects of treatment not only ceased but new lesions made their appearance. Porges⁶ had similar experience. Fox,⁷ on the contrary, refers to a case of lupus of the nose which had been unsuccessfully treated by various methods, and in which the improvement was marked after injections of the old tuberculin, recovery ensuing, and the patient

¹ Wiener medicinische Wochenschrift, 1898, No. 2.

² Das Tuberkulin R. Seine Wirkung und seine Stellung in der Therapie der innere und äusseren Tuberkulose. August Hirschwald, Berlin, 1898.

³ Archiv für Dermatologie und Syphilis, 1898, Band xlv., Heft 1.

⁴ Deutsche medicinische Wochenschrift, 1898, No. 27.

⁵ Journal of Cutaneous and Genito-Urinary Diseases, May, 1898.

⁶ Wiener klinische Wochenschrift, 1898, No. 15.

⁷ Journal of Cutaneous and Genito-Urinary Diseases, May, 1898.

remaining well for several years, a recurrence only recently taking place.

Equally successful results as the last (Fox's case) are recorded by Heron.¹ This writer refers to five cases successfully treated by him in 1891 with the old tuberculin. Unfortunately, however, the results were not permanent, as relapses had since taken place. In a case of lupus treated more recently by him, using the tuberculin R., recovery ensued. Under proper precautions Heron has never seen harm result. In Starek's² three cases of lupus the effects were diverse; two were apparently cured, the third was rather unfavorably influenced.

The use of tuberculin R. in four cases of lupus vulgaris under the care of Taylor³ more or less confirms the common experience that in the first weeks of treatment the effect is favorable. In his cases there subsequently came, while still under the injections, a stationary period and then a recrudescence.

Several other methods of treating lupus vulgaris have been referred to during the year: treatment by calomel injections, by X-rays, by concentrated luminous rays (Finsen's method), and total extirpation. The value of calomel injections, employed as advised in late and grave syphilis, is strongly indorsed by Asselbergs,⁴ who treated twenty-five cases by this method. In some cases there was slight amelioration only, in others marked improvement, and in others complete disappearance of the disease. The injections were usually made in the buttocks, and about every ten days. The most marked improvement is noted during the early part of the treatment. This method seems, according to Asselbergs, most appropriate for the ulcerative and deeply infiltrated cases of long duration; it is not so beneficial in the non-ulcerative types. It was found necessary in many of the cases to combine with it other measures—galvano-cautery, etc.

Du Castel,⁵ on the contrary, was not impressed with the advantage of calomel injections in the two cases in which he employed it. The local effect, as also observed by Asselbergs, was somewhat similar to that noted in the use of tuberculin. In one case there was slight improvement, but in the other there was no appreciable influence. He concludes that the method is to be looked upon as an adjuvant, to be combined with operative measures.

On Finsen's method of treating lupus by means of luminous rays, a valuable paper has been contributed by Bang,⁶ based upon cases treated

¹ British Medical Journal, July 9, 1898.

² Münchener medicinische Wochenschrift, April 26, 1898.

³ British Medical Journal, July 9, 1898.

⁴ Annales de Dermatologie et de Syphiligraphie, January, 1898. ⁵ Ibid., July, 1898.

⁶ Monatshefte für praktische Dermatologie, July, 1898; La Presse Médicale, August, 1898.

in Finsen's institute. The blood must be pressed out of the part to be treated, as it has been found by both these observers that this fluid is a bar to the passage of the chemical rays. Glass compressing instruments, as devised by Finsen, are used for this purpose. Bang describes an apparatus for the employment of sunlight and one for the voltaic arc light. The rays have a bactericidal action.

In treating lupus vulgaris the part is kept compressed and the pencil of violet rays permitted to fall perpendicularly. In order to shut off the heat rays, Finsen¹ uses a hollow lens filled with a solution of methylene-blue and ammonio-sulphate of copper. At the time of the sitting and immediately afterward, Bang states, the parts show no change; but several hours later redness and swelling, without accompanying pain, are observed, and not infrequently some vesicles with serous oozing; these do not become pustular nor do they ulcerate, but soon dry up. The redness continues for some time, the diseased areas gradually contract and give place to healthy scar-tissue. Each sitting has usually lasted two hours, but with the improved concentrators—rock-crystal—but one-half this time is required.

The greatest drawback, as Bang observes, is the duration of the treatment, even slight cases demanding a daily sitting for from four to six months, the more extensive and obstinate cases a year or more. Excepting this there are no disadvantages; it is without pain, and there is no scar produced except that due to the disease itself. So far as can be judged the results have been uniformly good, and while the treatment by this method has not been practised sufficiently long to speak definitely, as yet there have been no recurrences. A description of the apparatus is given.

Kümmell² claims good results in the treatment of lupus from both X-rays and concentrated luminous rays. He considers the X-rays especially preferable in extensive areas. With this latter treatment the cure is more certain and more rapid when caution is observed against injury to the skin from the rays. The action, he believes, is not bactericidal, but doubtless is brought about by some influence of a trophoneurotic character. The cosmetic result is much more satisfactory than that from the usual methods.

Albers-Schönberg³ relates a case in illustration of the value of this treatment. The case was one of lupus of two years' duration, involving the nose and upper lip, previously unsuccessfully treated by the usual

¹ *Settimanna med. dello Sperimentale*, 1898, No. 8.

² *Archiv für klinische Chirurgie*, 1898, vol. lvii.; *Monatshefte für praktische Dermatologie*, October 15, 1898.

³ *Fortschritte der Gebiete der Röntgenstrahlen*, Band i.; *Monatshefte für praktische Dermatologie*, November 15, 1898, Band xxvii., No. 10.

methods. The X-rays were repeatedly applied for eight months; as often as a dermatitis ensued the treatment was intermitted. Complete cure resulted. In a second case the same favorable effect ensued. In order to avoid severe X-ray dermatitis the tension of the current should not be too high. Further, the healthy surrounding parts should be protected with lead plates.

Schiff's¹ experience was with two patients, and the results were also satisfactory. His conclusions as to its action are as follows: (1) The reaction ensues in about ten days after an exposure, and lasts for a considerable time; (2) the X-rays, owing to their specific action upon the lupus nodules, bring into view the concealed tubercules; (3) the lupus nodules are loosened and fall out, owing to the action of the rays; (4) there is an immediate decrease in size of the swollen glands in the region of the lupus; (5) long exposure to X-rays induces the indolent tissue of the ulcer to begin the process of granulation. The effect of the X-rays is due to the inflammatory reaction evoked by them, which reaction changes the soil, and consequently impairs the development of the micro-organisms.

The radical surgical extirpation of lupus has from time to time received support, and when occurring as a small, sharply defined patch the method has many advocates. During the past twelve months Buschke² has contributed an article on this subject, and concludes that this method of radical treatment is the one to be adopted in cases at all suitable. Sound tissues for several lines beyond the actual area of disease should be included within the incision, in order that no outlying foci escape. If the area is small the incision should be closed with suture; if large, Thiersch's transplantation method or Krause's grafting method should be practised. If there is any doubt about the distance of the incision beyond the area of actual disease it is recommended that the tuberculin test be used as a preliminary measure. Ordinarily narcosis is not necessary, as the operation can be carried out under local anæsthesia—Schleich infiltration anæsthesia. The writer has obtained a number of cures and with good cosmetic result.

Urban,³ too, believes that excision is just as well adapted for lupus cases as for carcinomatous disease, admitting, naturally, that there are inoperable cases, especially those in which the disease is more or less disseminated and of the superficial type.

Tavastsjerna⁴ adopted this method in extensive cases, seventeen of the

¹ *Archiv für Dermatologie und Syphilis*, 1898, vol. xlii.; *Journal of Cutaneous and Genito-Urinary Diseases*, November, 1898.

² *Archiv für Dermatologie und Syphilis*, January, 1899.

³ *Monatshefte für praktische Dermatologie*, vol. xxvi., No. 9, 1898.

⁴ *Finska Lakaresällskapets Handlingar*, December 1, 1898; *Journal of Cutaneous and Genito-Urinary Diseases*, March, 1899.

eighteen cases involving mucous membrane of the nose and mouth, rhinoplasty being done fourteen times. His results after two years, considering the severity of his cases, were gratifying, and are strong commendations for this mode of treatment. The cure still held in five cases.

Granuloma Fungoides. At the meeting of the American Dermatological Association in 1898 there was a divergence of opinion as regards the possibility of confusing the earliest eruptive phenomena of the disease with eczema. This refers especially to the cases in which the tumor formation comes on late. The paper by Hyde and Montgomery,¹ based upon two recent cases of their own and a study of the literature of forty-five other cases, gives a clear presentation of our knowledge of the disease. Hyde states, in the discussion, with reference to the resemblance of the derma-

FIG. 9.



Granuloma fungoides. (WHITFIELD.)

toses in its earliest stage to eczema, that this was not apparent in their two cases to any marked degree, but in the résumé of the literature of the subject it was very strikingly apparent, and, if conclusions are to be formed by statistics, it can be stated positively that in a very large proportion of cases observed in America, England, and on the continent, the reporters declared that they were unable to recognize any distinction between the phenomena presented and those of ordinary eczema. The case reported by Whitfield² belonged also to the variety in which a pronounced eczematous stage, with very little tendency to tumor formation,

¹ Transactions of the American Dermatological Association, 1898.

² British Journal of Dermatology, May, 1898.

predominates. In my own several cases the earliest symptoms were distinctly eczematous, so far as clinical appearances go.

It is probably true, though, as Hyde and others believe, that these early eruptions are not truly eczematous in nature, but are in reality a part of the whole disease process of granuloma fungoides. A few French writers, Hardy, Leredde and others, quoted by Hyde, even go so far as to say that not only is the disease in full evolution when what may be termed the early mycosic dermatoses are developed, but that, wholly apart from the appearance of visible alterations, the apparently sound skin is at this period the subject of characteristic pathological changes which have been studied in sections of the corium.

As illustrating the early tumor variety, and one running a rapidly fatal course, is the case reported jointly by McVeil, Murray, and Atkinson.¹ In this case the disease followed a kick from a sheep.

A bacteriological examination was made in the case last mentioned and a bacillus was found. Pure cultivations were obtained from the fluid drawn off from the deeper portion of a nodule. Rabbits inoculated on a scratched surface gave no result, but subcutaneous injection on the head of the animal produced the development of nodules along the line of the post-cervical glands; death followed in about two weeks. Intra-peritoneal injection was followed by death in about two days, with local peritonitis and enlargement of the neighboring lymphatic glands; these glands were found to contain the bacillus, but the organism was not found in the blood of the animal.

Whitfield² makes the pertinent observation that it may be of importance for investigators to define the variety observed by them, since it is possible that different causes may be at work in cases like his and in those in which there are tumors from the start.

There is certainly a close affinity among the several skin affections characterized by tumor formation, which gives some reason for Kaposi placing them under one group—"sarcoid tumors." For example, it is somewhat difficult to place the case reported by Payne,³ of an old man, aged seventy-eight years, who had suffered from eczema a number of years; in later years there had appeared patches of erythema or modified eczema, upon two of which tumors had appeared and had existed for three years; these, in their general appearance, resembled granuloma fungoides. Microscopically, however, the growth was found to be spindle-celled sarcoma. The tumors had only extended slightly, and were not painful. One was on the side of the chest and the other

¹ Glasgow Hospital Reports, 1898, vol. i.; British Journal of Dermatology, April, 1899.

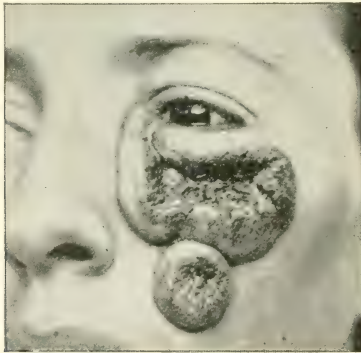
² Loc. cit.

³ British Journal of Dermatology, January, 1898.

on the shoulder. Clinically, this picture is strongly suggestive of granuloma fungoides, and yet the microscopical picture indicates otherwise.

Granuloma of the Face and Extremities. Under this provisional title Shepherd¹ reports a curious case in a woman of twenty-eight years, with features suggestive of granuloma fungoides, sarcoma, and possibly tuberculosis of the skin, although he admits the possibility that it may be an intermediate sarcoid tumor linking sarcoma and granuloma. The lesions appeared a week or two after the birth of her child six months previously, as two small lumps on the left side of the face, which gradually grew larger, and soon some small openings appeared, out of which oozed yellowish matter. Later on a similar growth appeared on the right leg. The growths on the face now touched, although there was no actual fusion; they became excavated, and the bordering part elevated about three-eighths of an inch; they had a spongy feel, were pinkish in color, and exuded a thin, sanious, foul-smelling discharge. The application of a strong mercurial ointment resulted in cure in the course of a few months, leaving well-marked scars showing considerable loss of tissue.

FIG. 10.



Granuloma. (SHEPHERD.)

Shepherd was not able to reach a positive conclusion as to its nature; syphilis could be excluded and the microscopical examination negated the idea of its being possibly sarcomatous. The microscopical examination pointed in the direction of an infection of granulomatous character. It is interesting to note that some time later this patient again came under observation, with an inflamed, swollen knee-joint, with three

¹ Journal of Cutaneous and Genito-Urinary Diseases, January, 1899.

fiatulous openings, and also with a tumor over the left trochanter major. No tubercle bacilli could be found, and inoculations in guinea-pigs were negative, but the injection of tuberculin in the patient produced a decided reaction.

Leprosy. The interest in the study of this disease rarely flags. It was exhibited collectively in the proceedings of the First International Scientific Leprosy Conference, held in Berlin in October of 1897. The three volumes published¹ contain much for reflection, and mark an important step in the international consideration of this disease. Abstracts² of papers and proceedings and condensed reports of the conference have been published during the past year.

An important point considered was the rôle played by the bacillus lepre. There is complete unanimity as to considering this the essential causative factor. In some instances, however, in cases which clinically are unmistakable examples of what we generally understand as forms or varieties of leprosy, no bacilli can be found. In the two cases of the mixed type reported by Kaposi,³ after the most careful search he was unable to find the parasite. This failure to find the bacillus by Kaposi and other capable observers means either that the bacillus is not always to be found in all the tissues, or that it is not present throughout the course, or that such cases represent in reality another disease. This last is scarcely probable. Doutrelepon,⁴ Unna,⁵ and Arning⁶ quoted experiences of such failures that were subsequently found to be due to the reagents employed.

Both Hansen and Neisser consider that the difference between the two types of leprosy—the maculo-anaesthetic and the tubercular—is probably dependent upon a difference in the quantity of bacilli and not due to any qualitative difference. It is likely, too, that external or unknown influences, as, for instance, mode of life, climate, food, etc., may have determining effect upon the multiplication of the bacilli as well as upon the election of the parts affected. Heredity as a factor has at the present day but few supporters.

Another subject of discussion was as to the means by which leprosy is communicated. The evidence was not conclusive. Lassar and Arning are of the opinion that the mode of introduction is probably similar to that of lupus, through the skin. It is known that in tropical countries, as reported by Geill,⁷ where people go barefooted, in a large proportion of cases (50 per cent. of Geill's cases) the first lesions are seen upon the

¹ Trans. of the First International Leprosy Conference. August Hirschwald, Berlin, 1898.

² Monatshefte für praktische Dermatologie, 1898, Band xxvii., Nos. 2 and 3; and condensed reports, Philadelphia Medical Journal, January 4 and 22, 1898.

³ Trans. of the Leprosy Conference, vol. i.

⁴ Ibid.

⁵ Ibid.

⁶ Ibid.

⁷ Ibid.

feet. Schaeffer's experiments are worthy of note. In a room containing lepers he placed slides upon the table and floor, near which he had the patients read aloud; large numbers of bacilli were found subsequently upon these slides, indicating a probable method of communication. It is known, as quoted by von Peterson,¹ Ehlers and others, that the first manifestations are in many instances upon exposed parts—on the face, hands, and feet.

An interesting fact, as shown by Schaeffer, and as previously recognized by Morrow, Sticker, Babes, von Peterson, Flügge, and Glück, is that the mucous membrane of the nose, and probably of the mouth also, may possibly be a source of communication. Indeed, the nasal mucous membrane has recently been thought to be the seat of inoculation in many instances, or the seat of the earliest manifestation—the initial lesion, in fact (Sticker). A case in point is reported by Samgin,² the disease beginning with a chronic rhinitis. As it has also been demonstrated that the seminal fluid, milk, and saliva may contain bacilli, the sources of danger are evidently manifold. And yet the spread of the disease, except in certain countries, has been insignificant, and the cases traceable to contagion few. On the contrary, spontaneous disappearance of the disease in communities under favorable hygienic conditions has been noted, as, for instance, in Minnesota in our own country. Thompson³ also shows that the disease is on the decrease in Victoria, Australia, where lepers have had free intercourse with the community. In spite of the fact, too, that lepers are not rare as visitors or as accidental inhabitants of London, Vienna, Paris, New York, and other centres, there has never been known cases of communication in such places. As Besnier⁴ states, in Paris, at the Hospital St. Louis, lepers are not isolated, and notwithstanding this no cases of contagion have ever occurred.

On the other hand, the rapid spread of the disease in Hawaii, and more recently in Tarwast (Lioland) and Louisiana (Dyer⁵), are signals of danger not to be overlooked. The food, uncleanness, and eating and social habits are undoubtedly factors of importance. In countries where the disease had gained considerable foothold, and where segregation has been practised, there has been a decrease in prevalence. Hansen's⁶ figures as to Norway emphasize this. He says in 1856 there were about three thousand lepers scattered through the community, and now (1897) only about seven hundred, and these mostly in asylums. He believes that in a short time the disease will have entirely disappeared from that country.

¹ Trans. of the Leprosy Conference, vol. i.

² Deutsche medicinische Wochenschrift, July 28, 1898.

³ Lancet, March 5, 1898.

⁴ Trans. of the Leprosy Conference.

⁵ Philadelphia Medical Journal, September 17, 1898.

⁶ Trans. of the Leprosy Conference.

It is seen that the contagiousness of the disease is now generally admitted, but it is also recognized that climate, bad food, uncleanness, etc., and some other unknown conditions are more or less necessary factors; further, that under favorable circumstances of climate, food, air, surroundings, and habits the danger of its communicability is practically *nil*.

Bracken¹ states from his observations that it is quite possible for leprosy to die out in certain favored sections of the country, such as Minnesota, without segregation, provided the importation of lepers be discontinued.

The possibility that certain diseases, comparatively rare but common to all countries, are varieties of leprosy, is suggested by Zambaco,² who sees such relationship in many cases of Morvan's disease, syringomyelia, scleroderma, sclerodactylia, Raynaud's disease, morphea, ainhum, and progressive muscular atrophy (Aran-Duchenne), and that many of the cases so designated are modified or weakened forms of lepra. The clinical resemblance, it is true, is often striking, as is already well known, and is emphasized by Cardamatis,³ who reports, under the head of "an intermediate type between leprosy, syringomyelia, and Morvan's disease," a case which presented symptoms more or less characteristic of these three affections. This view of the allied nature of these several diseases is contrary to experience and general belief.

During the year interesting reports of a number of autopsies have been made deserving of comment. Samgin⁴ gives the details of a post-mortem in a case of anæsthetic leprosy without mutilations. During life the writer had not been able to find any bacilli in the skin. He concluded from his histological investigations of the peripheral and central nervous system in this case that in lepra anæsthetica it is only possible to find bacilli in the fresh infiltrations, as the organisms are rapidly destroyed, both in the skin and nerves. The specific infiltration began at the peripheral end of the nerves and extended toward the central parts. The disappearance of the bacilli, the writer believes, depends upon the change of the infiltration into connective tissue.

Joseph⁵ had opportunity of making histological examinations of the tongue, liver, kidneys, and spleen in a case of typical tubercular leprosy of twenty years' duration. In the first three the most careful search failed to disclose the slightest trace of bacilli, while in the spleen they were found in enormous numbers. He was unable to find any of the

¹ Philadelphia Medical Journal, December 17, 1898.

² Trans. of the Leprosy Conference.

³ La Progrès Médicale, 1898, Nos. 33 and 34.

⁴ Deutsche medicinische Wochenschrift, 1898, No. 30.

⁵ Archiv für Dermatologie und Syphilis, 1898, Band xliii. and xliv.

organisms in the arteries or capillaries, but they were present in the lymph vessels and lymph spaces. Brutzer's¹ statements concerning nine autopsies is interesting in several particulars. Five of the patients had reached the age of seventy-five years, and three were over fifty-five years. Seven were women; two, men. The cause of death in one case was carcinoma of the stomach; in another, chronic bronchial catarrh, with asthma; in a third, fatty heart and generalized lipomatosis; in two cases, pyæmic conditions; in one, exhaustive suppuration, and in the remaining three cases, nerve disturbances. In all cases the kidneys were found diseased; and in six of the nine, bacilli were found in this organ. Brutzer also found these organisms in the spleen and liver, though none were discovered in the intestinal canal and stomach.

TREATMENT. As yet no method of successful treatment has been formulated. It is known that change to a country and climate where leprosy does not exist, and where the surroundings are hygienic, sometimes stays the disease, or at least its progress is materially retarded. This is particularly so with the anæsthetic variety. In the treatment, or, better, in the management, of this disease there are two factors—prophylaxis and medicinal treatment.

Under prophylaxis are to be enumerated the enforcement of cleanliness, hygienic surroundings, good food, and segregation. The Leprosy Conference adopted the following resolution,² proposed by Hansen and amended by Besnier:

1. In such countries where leprosy forms foci or has great extension, we have in isolation the best means of preventing the spread of the disease.

2. The system of obligatory notification, of observation and isolation, as carried out in Norway, is recommended to all nations with local self-government and a sufficient number of physicians.

3. It should be left to the legal authorities, after consultation with the medical authorities, to take such measures as are applicable to the special social conditions of the districts.

There are great difficulties in the way of isolating cases of this disease in communities where it is not endemic, and in such instances, in the opinion of many, strict isolation is not necessary. In such communities the danger from tuberculosis and syphilis is many times greater than from stray cases of leprosy. It is generally considered also that the anæsthetic variety is less active as regards contagion than the tubercular and mixed varieties, several gentlemen³ (Impfey, Delio) maintaining that the nervous type is not at all contagious, or practically not so; patients

¹ *Dermatologische Zeitschrift*, 1898, Band v., Heft 6.

² *Trans. of the Leprosy Conference*, vol. iii.; *Phila. Medical Journal*, Jan. 22, 1898.

³ *Trans. of the Leprosy Conference*, vol. i.

with this type, therefore, need not be so rigorously dealt with. If the view of the probable means of communication through the nose and mouth has any substantial basis, however, such difference should, theoretically at least, not exist.

Regarding the medicinal treatment variously employed, but little new is to be said. The serum treatment, as previously advocated by Carasquilla, has been given trial by others, but without proving, upon the whole, very promising. Dehio¹ treated nineteen patients for several months with this method, during which time nothing else was administered; the results were negative, no improvement even being noted, and in some cases fresh eruption presenting itself from time to time. On the other hand, this same remedy, obtained from Merck's laboratory, was also employed by Grünfeld² in two cases for a period of six months. In this period one received eighteen injections and the other twenty; it was also given by the mouth. The cases were of the tubercular type. In both cases there was considerable improvement; in one well marked. This improvement still obtained two and a half months after the treatment had been discontinued.

A favorable influence has been claimed by Haslund and Crocker from mercurial injections. Haslund³ used a solution of mercury formamidate, making one injection daily. In conjunction with this, however, sodium salicylate was given by the mouth, and an ointment of ichthyol-salicylic-acid-vaselin (15 : 5 : 100) was rubbed in daily, after a bath. The case was of the mixed type, with involvement of the mucous membrane of the nose, throat, larynx, etc. Under this treatment all ulcerations healed, the nodules decreased in number and size, and the mucous membrane became perfectly smooth. The patient was again able to breathe through the nose and to speak clearly. Crocker⁴ employed injections of corrosive sublimate, and in several cases in which he had pursued this treatment there had been decided improvement.

Chapin⁵ subjected four leprous patients to injections with the toxins of erysipelas and of the bacillus prodigiosus. The initial injection was one minim (Coley's preparation), and the dose was gradually increased to twenty-two minims. The results, however, were negative, there being no effect whatever upon the course of the disease. The treatment was continued seven weeks.

Melanosis Lenticularis Progressiva. Rotch⁶ reports two cases of this rare and eventually fatal disease in sisters, aged six and seven years,

¹ St. Petersburg medicinische Wochenschrift, July 4 and 11, 1898.

² Dermatologische Zeitschrift, 1898, Band v., Heft 3.

³ Ibid., 1899, Band vi., Heft 1.

⁴ Trans. of the Leprosy Conference, vol. iii.

⁵ New York Medical Record, January 7, 1899.

⁶ Archives of Pediatrics, December, 1898.

one developing the first evidences when three months and the other when five months old. There was no family history of the disease, and the other organs were normal. Urine examination negative; blood examination showed about 3 per cent. of eosinophiles. Microscopical examination of some of the growths disclosed epidermoid cancer of typical character.

TREATMENT. Various plans of treatment were tried, but without permanent avail. In one case the lesions were curetted out several times, but recurrence took place in the scars. In this case daily injections of mixed toxins of streptococcus erysipelatis and bacillus prodigiosus were tried, increasing gradually until thirteen drops were administered. The soft growths showed some retrogression, and were less moist; the crusts fell off and some of the warty formations disappeared. On omitting the injections for a few days a recrudescence ensued and new lesions appeared; this tendency disappeared as soon as the injections were resumed. The child became habituated to the injections—eighteen drops being reached—and the remedy seemed to lose its controlling influence, even a day's intermission giving the disease headway again. In this case it was noted that some improvement took place when the child was kept in a darkened room, the sunshine having an influence favorable to the disease.

Experiments as to the effect of different colored lights were made with the other child—red and green being tried, all light reaching the child coming through the colored glass. The red glass seemed to have a restraining action on some of the growths, but there was no general improvement. There was no action noticed from the green light. Combined toxin treatment, as in the other case, seemed to exert a favorable influence.

Multiple Idiopathic Pigmented Sarcoma. Wende¹ records a case of multiple pigmented sarcoma in a man aged forty-five years.

The treatment consisted of the internal administration of arsenic with tonics. Later the arsenic was administered subcutaneously according to the plan advised by Köbner. At present the patient is receiving hypodermatically seven drops of Fowler's solution, mixed with twelve drops of distilled water, daily. Even with his brief observation of this treatment in the case here reported, Wende believes it indicates diminished tissue changes, and is in harmony with the theory of Köbner, that improvement in multiple idiopathic pigmented sarcoma follows the hypodermatic administration of arsenic.

This plan I have used in one case pretty thoroughly, but without result. The case did not, however, come under observation until the disease was far advanced. It is the only method of treatment which has any cases to its credit, and should, therefore, always be tried.

¹ Journal of Cutaneous and Genito-Urinary Diseases, May, 1898.

NEUROSES.

Erythromelalgia. Cases of erythromelalgia are reported by Collier,¹ by Carslaw,² by Gelpke,³ and by Weir Mitchell and Spiller.⁴ The association of nervous disease, as was to be expected, was noted. In Gelpke's case, a boy of nine years, symptoms of meningitis and cardialgia had already appeared. In Collier's cases there was multiple sclerosis in six cases, tabes in two, myelitis in one, and traumatic neurosis in the last. From a study of his cases and other reported cases this writer believes that the disease cannot be considered an idiopathic vasomotor neurosis, but is practically a symptom complex indicating central nervous disturbance. Mitchell and Spiller's study of the disease and microscopical examination of the tissues in one case do not agree with this conclusion. They found in the case reported by them that the disease could be attributed to a peripheral neuritis, but in some cases it may result from involvement of the sensory fibres anywhere between the spinal cord and the peripheral ramifications.

Pruritus. Itching of the skin, independent of any visible structural changes, is frequent enough, and its localization in certain parts, as the genital and anal regions, is not uncommon; but its limitation to a circumscribed region, varying in its locality from time to time, is certainly out of the usual order, and difficult of explanation. Whitehouse⁵ records such a case in a man apparently in an otherwise healthy condition. For eight years he had been tormented by this pruritus, which was peculiar in that it was not especially troublesome at night and that it occurred in spots. He was never free from a circumscribed area of intense itching a moment—so intense sometimes that it was almost unbearable. When last seen by the writer it was around one eye, but it may appear on an arm, the leg, on the trunk, or in various parts of the face. There is never any accompanying redness or swelling of the tissues.

A variety of pruritus not heretofore described is that to which I called attention during the past year, under the title of "bath pruritus,"⁶ designating by this term the itching or burning from which some persons suffer immediately after a bath. It varies from a slight pricking or burning to almost intolerable itching. It is commonly situated on the legs from the hips down. It lasts from ten minutes to a half hour, becoming more intense for a while, and then gradually subsides.

¹ Lancet, August 13, 1898.

² Glasgow Medical Journal, December, 1898.

³ Correspondenzblatt für Schweizer Ärzte, January, 1899.

⁴ American Journal of the Medical Sciences, January, 1899.

⁵ Journal of Cutaneous and Genito-Urinary Diseases, February, 1899.

⁶ Philadelphia Medical Journal, October 22, 1898.

Various causes have been assigned for pruritus, all of which doubtless act by irritating the peripheral nerves. Whitehouse's case seemed to be a hyperesthesia of the skin of neurotic origin. The urine often affords a clue. In discussing the above case, Robinson¹ calls attention to the fact that the disease may be associated with phosphaturia, and that in some cases oxaluria is present.

In bath pruritus it is difficult to assign a cause unless the water acts as a direct irritant. It is noted that prolonged bathing and the use of very hot or very cold water aggravates the condition, although it is usually independent of the temperature of the water. Persons having a dry, irritable skin, and those of rheumatic and gouty tendencies, are most susceptible, and the disorder is favored by imperfect digestion, worry, and a generally nervous temperament.

TREATMENT. Jamieson² commends the value of pilocarpin in the pruritus of old age; it serves to flush out the sweat ducts, and should be repeated night after night for a few weeks. He has observed much betterment from this treatment, and sometimes permanent cures.

Wannemacher³ extols salophen as a remedy of value in some of these cases, given in doses of fifteen grains three or four times daily. I have also had the same experience in a few instances. Savill⁴ has seen marked benefit from the administration of calcium chloride.

In bath pruritus treatment is not very satisfactory, a weak glycerin lotion or cold cream or vaseline, with a few grains of carbolic acid or thymol to the ounce, will usually lessen the severity of the attack, and exceptionally abolish it. Antilithæmic remedies are of some benefit occasionally. In referring to the paper on this variety of pruritus, Hall⁵ writes that in several cases coming under his notice all could not only endure but actually enjoy the Turkish bath without subsequent pruritus. Another writer⁶ refers to his own case, stating that he had been able to keep the condition in complete abeyance by one-tenth grain dose of arsenic daily; if the remedy is discontinued the pruritus is again experienced.

PARASITIC DISEASES.

Ringworm. The knowledge that ringworm is the result of invasion of the cutaneous tissue by various kinds of fungi is becoming general. Sabouraud's two main classes of these fungi, the small spored (microspo-

¹ Journal of Cutaneous and Genito-Urinary Diseases, February, 1899.

² British Medical Journal, August 6, 1898.

³ Journal de Médecine de Paris, September 19, 1898.

⁴ Treatment, December 22, 1898.

⁵ Philadelphia Medical Journal, December 24, 1898.

⁶ Ibid., January 7, 1899.

ron Audouini) and the large spored (trichophyton), are now accepted, and the two varieties of the large spored, the endothrix and the ectothrix, are also generally recognized as distinct factors. There are further subdivisions made by Sabouraud, but his views as to these are not yet confirmed or accepted. Valuable contributions bearing on these vegetable parasites and the resulting diseased manifestations have been contributed during the year by Malcolm Morris,¹ Pernet,² C. J. White,³ and Corlett.⁴ The small-spored fungus is usually responsible for most cases of the scalp ringworm in children under the age of thirteen years—for the large majority, at least—and this variety of the disease is chronic, obstinate, and probably much more contagious than the large-spored disease. Colecott Fox,⁵ and also others, have, however, observed chronicity in the latter types. Ringworm due to the microsporon Audouini is less apt to give rise to rounded or ring-like patches on the general body surface; outside of the scalp region this type is usually short-lived or readily disappears under treatment. The majority of cases of ringworm of the body surface are due to the large spore fungus, both varieties.

Trichophyton derived from the animal—usually the ectothrix—causes, as a rule, a great deal of cutaneous inflammatory disturbance, which may often be pustular in character. To this fungus are due kerion of the scalp in children and the nodular suppurative sycosis in the bearded region of the male adult; the superficial, non-suppurative form in this latter region is due to the endothrix. Kerion may, however, be produced by the endothrix also; Colcott Fox⁶ refers to five such cases.

That animals are not infrequently the source of the contagion in ringworm has long been recognized. Colecott Fox and Bloxall⁷ report two cases—brothers—of extensive ringworm involving the general surface, in which the source of the disease was probably a cat. Eddowes⁸ also emphasizes the possibility of animal origin in some cases in a paper read before the London Dermatological Society, in which he reported a case of ringworm of the wrist and chin in a girl of fifteen years, contracted from a pet hedgehog; the same fungus was found in hairs from the animal as in the scales from the patches of his patient. He had since heard of another case similarly produced.

It is usual, as already stated, in ringworm of the scalp in children, more frequently due to the small-spored fungus (microsporon Audouini), for the disease to be chronic; the large-spored fungus on this region is less tenacious, as a rule. Body surface ringworm, on the con-

¹ Ringworm in the Light of Recent Research, London, 1898.

² Lancet, October 1, 1898.

³ Journal of Cutaneous and Genito-Urinary Diseases, January, 1899.

⁴ Journal of the American Medical Association, March 18, 1899.

⁵ British Journal of Dermatology, July, 1898.

⁶ Ibid., July, 1898. ⁷ Ibid., February, 1898. ⁸ Ibid., April, 1898.

trary, whatever the variety of fungus may be, has usually been considered readily managed, and upon the whole this is so; but there are many exceptions showing obstinacy and a recurrent nature. Crocker and Pernet¹ showed such an example before the London Dermatological Society, in which the disease was on the back of the hand, extending over the first three knuckles and on to the fingers; the central part was reddened and the border excoriated and crusted. The large-spored fungus was found. It took two months to bring about what seemed a cure, but the disease returned in the same place two or three months later. It was believed, and this is probably the correct explanation, that the recurrence was due to the fact that some of the fungus lying deep down in the hair follicles had escaped destruction.

Various kinds of skin irritation or lesions somewhat anomalous in character are beginning to be suspected of being due to the ringworm fungi. Pringle² records a case in point. The eruption, in a male adult, and microscopically demonstrated to be ringworm, was distributed over the dorsal surface of both hands and fingers, and to a less extent on the neck, and consisted of numerous patches of very superficial, finely scaly dermatitis. All were convex outward, but none accurately circular in outline; one patch was eczematous in appearance and oozing. The hair, which was usually copious over the intervening normal skin, was markedly scanty over the patches. The fungus found was the ectothrix variety.

Ringworm of the scalp is rarely seen in the adult. Several such cases have been reported during the past year by Colecott Fox,³ Aldersmith,⁴ Anderson,⁵ and Abraham;⁶ in all the four cases being due to the large-spored fungus, in three to the endothrix, and the other to the ectothrix. In two of these instances the source of contagion was a younger brother. In Anderson's case the area (one patch) was bald and closely resembled alopecia areata; in Fox's case there was an area of baldness, but with a magnifying glass the bald patches (two) could be seen studded with about a half-dozen black stumps broken off short in the follicles; in Aldersmith's patient there was but one diseased area, and in this the skin seemed smooth, and there was no appearance of any ring; the majority of hairs grew healthily and firmly on the place, but scattered here and there among the healthy hairs were numerous black dots and very short stumps; the case, the writer stated, could have been easily overlooked without a most careful examination with the lens. The case reported by Abraham was of the usual type, and consisted of one patch.

¹ British Journal of Dermatology, September, 1898.

³ Ibid., July, 1898.

⁵ Ibid., April, 1899.

² Ibid., February, 1898.

⁴ Ibid., January, 1898.

⁶ Ibid., April, 1899.

The nails are sometimes attacked by the ringworm fungus independently, or they become diseased along with patches of the eruption elsewhere on the surface. Censi¹ distinguishes two varieties of the affection of the nails—the atrophic and hypertrophic forms. In the former the nails are opaque and brittle, but not increased in volume; in the latter the nail is thickened, curved, and nodular, shaped like a bird's claw or ram's horn. He records two cases of this latter variety, in both of which the toe-nails were the parts affected. The nails were thickened, friable, dark in color, and partially detached from their beds. As a rule, the spores of the fungus may be readily distinguished in the scrapings.

Levisseur² states that in the cases of ringworm of the nails observed by him the disease had first attacked the nails from the back and sides.

TREATMENT. The avoidance of the subject of treatment in the various scientific papers on ringworm, referred to, is probably to be considered a silent expression of its difficulty—referring, of course, to cases of ringworm of the scalp, those reaching the hands of the dermatologist usually being of the persistent, rebellious type. Ringworm of this region cured rapidly usually means the mild form, in its earliest beginning, and probably of the large-spored type. Several methods have, however, been extolled during the year. Sheffield's³ experience seems an unusually favorable one. He states that his method has effected cures in from three to six weeks. It consists of clipping the hair very short, after which a mixture made up of carbolic acid, petroleum oil, each 65 parts; tincture of iodine and castor oil, 110 parts; and oleum rusci enough to make 500 parts, is thoroughly applied over the entire scalp, and repeated daily for five days. At the end of this time, on the sixth day, the parts are cleansed with olive oil, washed with *sapo viridis*, and the hair clipped short again. This treatment is thus repeated for several weeks, and finally for two weeks a lotion consisting of 15 parts each of resorein and salicylic acid, alcohol 100 parts, and sufficient castor oil to make 500 parts. The length of time depends upon the severity of the case and the conditions presenting. As soon as new hairs appear and are found to show no fungus the treatment is completed. The remedies are all well-known, long in use in this disease, and capable of doing good in many cases, but short cures in all cases in this disease are naturally to be looked upon with suspicion until confirmed by several observers; occasionally one has a run of mild cases, with good results, from good treatment well carried out. Lyle⁴ claims that he has had a great measure of success with a plan of treatment consisting in super-

¹ Clin. Dermatosif. della R. Univ. di Roma, fasc. i, 1898; British Journal of Dermatology, November, 1898.

² Journal of Cutaneous and Genito-Urinary Diseases, May, 1898.

³ New York Medical Record, May 14, 1898.

⁴ Lancet, October 8, 1898.

ficial curetting and the application of a solution of silver nitrate, a drachm to the ounce. The head is first shaved, and then the patch or patches scraped with a curette, and the silver nitrate solution applied. These measures are carried out every three or four days, always curetting as a preliminary, thus scraping off the underlying parasitic growth, before reapplying the solution.

Corlett¹ goes over the accepted methods of treatment, especially commending chrysarobin in ointment or in a solution of gutta percha, although acknowledging its disadvantages. The favorable action of this drug is well recognized by others. This writer also states that his limited experience with formalin indicates that it will prove valuable in this disease, used either in solution or ointment, in strengths varying from 5 to 15 per cent.; he advises first cleaning the parts with ether or benzine. At the meeting of the American Dermatological Association² in June last the general opinion was rather unfavorable to this drug, Hutchins and Allen claiming good results, and Gilchrist and Johnston referring to unsuccessful action and occasional intractable dermatitis produced by its use. The position of this remedy is, therefore, not yet fixed.

Favus. Generalized favus cases are rare. Montserret³ reports another such instance. The patient, a man aged twenty-four years, was cachectic and suffering from phthisis well advanced, and for this latter was admitted into the hospital. He also presented favus of the scalp, which had existed for twenty years, and for the past year patches of various sizes had appeared upon the general body surface. The favus eruption displayed the usual characters. An interesting point was that in addition to the tubercle bacilli scanty favus-fungus elements were found in the sputa, which suggested the possibility of the fungus being in the lungs or alimentary canal; this supposition, however, was not confirmed by the autopsy.

Tinea Versicolor. The eruption in this disease not infrequently extends beyond the trunk limit, but usually only when the eruption is extensive. Allen⁴ presented an extensive case before the New York Dermatological Association, for the purpose of calling attention to the fact that in these instances the eruption upon the pubic region, hidden by the hair, may escape observation and treatment, and, therefore, frequently be the cause of recurrence. In the discussion Robinson and Lustgarten both stated that they had seen a number of cases in which the eruption was limited to the pubic and groin region. Such an observation is, however, extremely unusual, and if not made by experienced

¹ Loc. cit.

² Journal of Cutaneous and Genito-Urinary Diseases, September, 1898.

³ La Presse Médicale, 1898, No. 40.

⁴ Journal of Cutaneous and Genito-Urinary Diseases, May, 1898.

observers would suggest the possibility of confusion with erythrasma, a disease similar in many respects and often limited to such regions.

Recurrence is, unfortunately, almost the rule in this disease, and is no doubt due to the fact that at some point the fungus has escaped destruction. I have learned by experience that the plan of making occasional applications of suitable remedies, or the use of a medicated soap, such as one containing sulphur and naphthol, for several weeks after apparent cure, is a good one. Jamieson¹ calls attention to the value of this plan in preventing a return of the disease, advising the use of a soap containing salicylic acid and resorcin.

FIG. 11.



Blastomycetic dermatitis. (GILCHRIST and STOKES.)

Blastomycetic Dermatitis. It seems possible that future observation will show that some of the cases heretofore classed as lupus vulgaris and anomalous cutaneous diseases will be found to be due to the blastomyces. A remarkable instance in point is the case reported by Gilchrist and Stokes,² which closely simulated lupus vulgaris and the tubercular serpiginous syphiloderm, involving large parts of the face and forehead, back of the hand and front of the thigh, and presenting a picture not

¹ British Medical Journal, August 6, 1898.

² Journal of Experimental Medicine, January, 1898.

uncommon with extensive lupus, especially in places to papillomatous lupus or tuberculosis verrucosa cutis; some parts had undergone spontaneous cure. It had already lasted eleven years. The presence of blastomyces was demonstrated in excised portions of the diseased integument, and almost typical tubercles were also found in places. The organism produces in cultures a mycelium. The organisms in the tissues, usually in the granulation tissue, are observed to be spherical bodies ten to twenty millimetres in diameter, many of which show buds; on examination they are found to consist of a doubly contoured membrane inclosing a finely granular protoplasm, with sometimes a vacuole. Unstained sections soaked in liquor potassæ and examined microscopically disclose the organisms as doubly contoured refractile bodies. Animal inoculations were practised with positive results. The organisms grow on the ordinary media.

Hessler¹ also records a case of this disease, in its beginning or mildest stage very similar to the first manifestation of the case just referred to. The disease had its beginning at a point where the skin had been cut with a razor, just under the chin. A red papule developed, about the size of a half grain of wheat, elevated, hard, but freely movable with the skin. It remained apparently stationary for several months, when it began to grow and increased to the size of a large pea; it was bright red in color, and finally came to a head. This little abscess was opened antiseptically. Cultures were made and disclosed the organism, somewhat smaller than that described by the above writers. The opened lesion was treated with applications of carbolic acid, and finally healing ensued. Later a new papule had appeared just outside of the glazed scar of the original lesion, indicating that the organism was still at work.

In the case reported by Wells,² in a man of forty years, involving the back of the hand, the disease began eleven years ago as a papular lesion, developed into a small ulcer, and assumed a fungating or papillomatous character, gradually spreading.

These cases point to chronicity as one of the features which characterize inflammations due to pathogenic yeasts, and in all these cases the disease began as a small papule.

Pigmentation Due to the Demodex Folliculorum. According to De Amicis,³ the demodex folliculorum is not absolutely harmless. He describes a pigmentary affection due to this parasite. In the case reported a pigmented patch of a café-au-lait color gradually spread over the skin of the chin and lip of a woman, aged twenty-seven years. At first the

¹ Indiana Medical Journal, August, 1898; Medicine, September, 1898.

² New York Medical Journal, March 26, 1898.

³ Giornale Italiano delle Malattie Veneree e della Pelle, fasc. iii., 1898; British Journal of Dermatology, January, 1899.

idea arose that it might be due to the microsporon furfur, as this fungus does unexceptionally invade the part from the chest, but a search for this fungus was not successful. It revealed, however, the presence of a large number of specimens of the demodex, as many as twenty-two appearing in one preparation, and measures directed to remove this parasite resulted in the gradual disappearance of the pigmentation.

Majocchi¹ referred to two instances that had come under his observation, in which the demodex had been found in apparently causative relationship in pigmentation of the skin ; in his cases, however, accompanied by slight desquamation.

Pediculosis. Jamieson² makes a good suggestion for the management of pediculosis corporis in those individuals who seem to possess especial attractions for these parasites, or in those of the dispensary class who cannot give as much attention to boiling or baking the clothing, or to frequently changing it, as the usual successful management of this condition demands. He utilizes the known fact that these parasites dislike sulphur and its oxidized products, and that these latter are more or less destructive to their vitality. Such persons are advised to wear a bag made of porous material, containing lumps of sulphur. This is worn next the skin day and night, and the sulphur undergoes slow oxidization at the temperature of the body. The method, Jamieson states, has proved eminently successful.

¹ *Giornale Italiano delle Malattie Veneree e della Pelle*, fasc. iii., 1898; *British Journal of Dermatology*, January, 1899.

² *British Medical Journal*, August 6, 1898.

DISEASES OF THE NERVOUS SYSTEM.

BY WILLIAM G. SPILLER, M.D.

DISEASES OF THE BRAIN.

Cerebral Tumor. Brain tumor is sooner or later fatal unless surgical intervention permits removal of the growth; every sign, therefore, which aids in a diagnosis of the location of the tumor is of value. Too often the neoplasm is subcortical or infiltrating, and the incision must be closed without removal of the tumor, though frequently the mere opening of the skull gives relief from the severity of the symptoms. It is desirable that the cases for operation should be carefully selected. Cerebellar growths are difficult to remove, at times difficult to diagnosticate.

SYMPTOMS AND DIAGNOSIS. We owe the discovery of a new sign of cerebellar tumor to Schmidt,¹ who observed two cases in which the growth was situated in one cerebellar lobe, and caused vomiting, vertigo, or ringing in the ears when the patient laid upon the opposite side of the body. He believed that the vena magna Galeni or the aqueduct of Sylvius was compressed, and that the symptoms were produced in this way. This sign may prove to be important in localizing cerebellar tumors, but its value can only be determined after more cases are reported. I have observed it in a case believed to be one of cerebellar new-growth, but the diagnosis is not positive, and has not yet been confirmed by necropsy. The sign when present seems to be indicative of large size and median situation of the tumor, and is rather a warning against operation than an inducement to surgical intervention.

The Röntgen rays have not proved of great value in the diagnosis of intracranial tumors, although experiments have been conducted on the cadaver. Church² reports a case in which a tumor of the cerebellum was located during life by means of these rays. In view of discouraging statements that have recently been made in German literature regarding the possibility of locating intracranial new-growths by this method, every success is noteworthy.

Nuclei and nerve-roots may be subjected to considerable pressure from a tumor and yet suffer no functional disturbance. Disregard of this fact

¹ Wiener klin. Wochenschrift, 1898, No. 51.

² American Journal of the Medical Sciences, February, 1899.

sometimes leads to mistaken diagnosis of location. A round-cell sarcoma was found by Mann and Delépine¹ in the tegmentum of the left cerebral peduncle. The nuclei of the third, fourth, and fifth nerves were all near the tumor and partly involved in the necrosed zone. The fibres of the second, third, fourth, fifth, sixth, seventh, and eighth nerves either passed through degenerated tissue or were subjected to pressure, but the left third nerve was the only one in which striking degenerative changes were found. It was surprising that so many of the cranial nerves failed to show functional disturbance, and an explanation was sought in the slow growth of the tumor (three years and one month). It is very true that rapidity or slowness of growth in cerebral tumors causes different clinical manifestations. Sweet and Spiller² reported a case before the Philadelphia Neurological Society, in which great pressure from a cerebellar tumor caused no disturbance of function in the sixth and seventh nerves, and yet the tumor was of rapid growth and pressed upon the nerves.

Various conditions may closely simulate brain tumor, and the diagnosis may be difficult or impossible, as in a case reported by Wenhardt.³

The radiating pains in the nucha and occipital region increased by any movement of the head, and relieved by the recumbent position, the forward and left lateral inclination of the head, the arching of the cervical portion of the vertebral column with the concavity to the left, the rigidity of the head, the supporting of the head when the patient was in the sitting or recumbent position, the left unilateral atrophy of the tongue, showed an affection of the uppermost part of the vertebral column and involvement of the hypoglossus nerve. The tuberculous family history, the presence of a fluctuating tumor resembling an abscess on the posterior wall of the pharynx, and the knowledge that caries of the basal part of the occipital bone and the two uppermost vertebrae produces a clinical picture such as was present in this case, led to a diagnosis of caries of this region. At the necropsy a myxochondrosarcoma was found, which was chiefly on the left side of the foramen magnum, involving also the first and second cervical vertebrae. The growth at the base of the brain had given none of the characteristic symptoms of tumor. Headache, vertigo, convulsions, slow pulse, abnormal breathing, optic neuritis, vesical disturbance, vomiting, so common with tumors of the posterior fossa, were absent. This case is interesting and important, and resembles somewhat a case reported by Dereum⁴ during the past year before the Philadelphia Neurological Society.

Serous meningitis, concerning which we have heard so much in the last

¹ Brain, 1898, vol. xxi.

² Journal of Nervous and Mental Disease, May, 1899.

³ Neurolog. Centralblatt, June 15, 1898, No. 12.

⁴ Journal of Nervous and Mental Disease, January, 1899.

few years, may simulate cerebral tumor. A case has been reported by Diller¹ in which this condition caused the symptoms of brain tumor.

Occasionally some very rare tumors are found within the cranial cavity, as, for example, a tumor of the cerebral dura observed by Haenel.² Nerve fibres and nerve cells were present within the growth. These cells resembled those of a spinal or Gasserian ganglion, and some parts of the tumor presented very much the appearance of the structure of the Gasserian ganglion. This tumor Haenel regarded as an example of congenital heterotopia, and called it a *neuroganglioma myelinicum verum*. Tumors of different kinds were found close to one another within the cranium of this person—namely, a round-cell sarcoma, a papillary spindle-cell sarcoma, a lymphendothelioma, a neuroganglioma, and a peculiar form of vascular proliferation.

Primary carcinoma of the brain is exceedingly rare, but Buchholz³ finds from a study of the literature that metastatic carcinoma of the brain is not so uncommon. He reports a case of multiple carcinoma of the central nervous system secondary to carcinoma of the breast. Except in the axillary glands metastasis was found only in the central nervous system. The adventitia of many of the vessels of the brain was infiltrated by carcinoma cells. Signs of distinct inflammation about the numerous nodules were not seen. The presence of carcinomatous growths within the substance of the spinal cord was of much interest on account of the rarity of carcinoma in this part of the central nervous system.

The discharge of cerebro-spinal fluid through the nasal passages has been seen in some cases of brain tumor. Wollenberg⁴ reports a case in which two tumors were found in the right occipital lobe, and a defect existed in the anterior wall of each lateral ventricle. The patient had had an almost constant secretion of cerebro-spinal fluid from the nose, and when the flow ceased temporarily the symptoms increased.

Körner⁵ also reports a case which he believed to be one of tumor of the pituitary body, in which cerebro-spinal fluid was discharged through the left nostril. He found eight cases with a similar symptom-complex reported in the literature.

Disappearance of optic neuritis is not a common sign of cerebral tumor. A case was seen by Jacobsohn⁶ in which a tumor of the inner capsule and one of the cerebellum were found, and optic neuritis, which

¹ Journal of Nervous and Mental Disease, June, 1898.

² Archiv für Psychiatrie, vol. xxxi., Nos. 1 and 2.

³ Monatsschrift für Psychiatrie und Neurologie, September, 1898, Band iv., Heft 3.

⁴ Archiv für Psychiatrie, Band xxxi., Heft 1 and 2.

⁵ Zeitschrift. f. Ohrenheilkunde, xxxiii., 1. Abstract in Münch. med. Wochenschrift, October 25, 1898.

⁶ Archiv für Psychiatrie, vol. xxxi., No. 3.

was present, disappeared before death. In the discussion on this subject, Oppenheim said that he had observed this variation in optic neuritis, and regarded it as unusual. He favored the mechanical theory in explanation of choked disk. Schuster mentioned a case of glioma of the cerebellum in which iodide of potassium was administered according to Wernicke's suggestion, in "grossen Dosen bis ca. 6 GR. täglich." Some of our countrymen would hardly consider these doses very large. All subjective symptoms, vomiting, and choked disk disappeared for two months, but the optic neuritis returned. Goldscheider referred to one of his cases of cerebral tumor in which choked disk disappeared after lumbar puncture, then returned, and disappeared again without any recognizable cause.

It is exceedingly important to bear these facts in mind, for a most careful clinician may well question the correctness of a diagnosis of brain tumor in a case in which marked optic neuritis has disappeared, though, of course, brain tumor may exist without optic neuritis at any time. Disappearance of optic neuritis may well arouse a suspicion of syphilitic meningitis.

Beevor¹ opened a very important discussion on intracranial tumors at a meeting of the London Neurological Society. In speaking of frontal tumor he said that the headache is usually frontal, and probably more often on the same side as the tumor, but may be vertical or occipital. Mental changes are usually well marked in intramedullary cases, but not in extramedullary, and are most marked when both frontal lobes are involved. The sense of smell is not lost in intramedullary, but may be in extramedullary cases, especially when the growth involves the under-surface of the frontal lobe. Nystagmus, staggering to one side, and hemiplegia are absent in extramedullary but may be present in intramedullary growths. Vertigo is uncommon in frontal tumors.

In intramedullary cerebellar growths of the lateral lobes within the cerebellar fossa, pain and tenderness, according to Beevor, occur in the occipital region on the same side as the tumor; sense of smell and mentality are normal, or the latter is affected late; nystagmus is present on lateral movement; there is no hemiparesis; staggering occurs backward and to the opposite side, and vertigo is frequently present. The facial and auditory nerves are not paralyzed.

In extramedullary growths in the anterior part of the posterior fossa, headache may be frontal and on the side opposite to the tumor; hemiparesis may be on the same side, with increased knee-jerks, and staggering may be to either side. Facial paralysis and perosseal deafness occurring on the same side, with lateral nystagmus to that side, and

¹ Brain, Autumn, 1898, p. 291.

hemiparesis of the same side, with staggering to one side, especially the same side, are strong evidences of a growth in the petrous portion of the posterior fossa on that side.

In intramedullary tumors of the lateral cerebellar lobes, Beevor said that the pain is occipital or in the opposite frontal region; hemiparesis and exaggerated knee-jerk occur on the same side, with weak conjugate movements to that side, and nystagmus on trying to look to the tumor side.

Clarke thought that if, with the general signs of an intracranial growth, mental symptoms of a certain character mentioned by him appear early and persist and form a prominent feature of the illness, and there is frontal or frontal and occipital headache, and, later, hemiparesis, with or without localized convulsions and ataxia of gait, there is good evidence of a tumor of the prefrontal area. Tenderness over the frontal region on the affected side and greater intensity of the optic neuritis on that side are of localizing value. It is well to remember that occipital headache may occur in frontal tumor.

In ten cases of tumor of the thalamus, Clarke said that the chief points were the infrequency of anæsthesia of the opposite side and of early loss of control over the bladder, the constancy of hemiparesis of the side opposite to the tumor, the paresis being most marked in the upper limb, with intentional tremor or athetoid movement of this limb.

Sharkey said that unilateral optic neuritis is rare, but when it occurs it is usually on the same side as the growth. Large tumors of the frontal lobe may not produce any serious symptoms for a long time.

Pitt and Gunn spoke of the frequency of optic neuritis in cerebellar tumors. Gunn believed that cerebellar tumors often excite a peculiarly intense optic neuritis, with not uncommonly a macular stellate figure similar to that seen in albuminuric retinitis, though he has seen this macular figure in two cases of frontal tumor. A condition of the retina similar to that of albuminuric retinitis was seen in the case of cerebellar tumor reported by Sweet and myself.¹

The entire discussion on this important and difficult subject is worthy of careful study, and limited space does not permit me to do more than refer to it.

Ataxia of the limbs has been observed in tumor of the frontal lobe, but Bruns² reports a case in which it was absent. He believes that this ataxia is due to weakness of the trunk muscles, the centres for which are in the median portion of the frontal lobe, in the gyrus marginalis. Optic neuritis was late in appearing, as is often the case in frontal tumor.

¹ Loc. cit.

² Neurologisches Centralblatt, September 1, 1898, No. 17; and September 15, 1898, No. 18.

Optic neuritis, unilateral at its commencement, may be seen in tumors of any location, and is only of localizing value in connection with other symptoms. Bruns says that when the third nerve on one side and the limbs on the other side are paralyzed, the mistake of localizing the tumor in the cerebral peduncle may be made, when the growth may really be in the frontal lobe. Intelligence is dependent upon the integrity of all parts of the brain, and the somnolence in cases of frontal tumor is especially great, probably because tumors in this situation may become very large before they cause pressure on the medulla oblongata.

In another case Bruns located a tumor in the upper part of the left parietal lobe, on account of the right-sided hemialgesia, disturbance of muscular and stereognostic senses on the right side, right hemianopsia, sensory aphasia, paresis and exaggerated reflexes on the right side, and right-sided transitory ptosis. The latter sign has frequently been seen in affections of the parietal lobe. He believed that the tumor was in the white matter and not in the cortex, because headache and sensitiveness to percussion had been absent during a long time, and hemialgesia is seldom seen in cortical affections and is usually due to capsular lesions, although disturbance of muscular and stereognostic senses is not an infrequent symptom of parietal lesions. Hemianopsia and disturbance of sensation appeared about the same time, and this indicated involvement of the posterior part of the internal capsule. At the necropsy a sarcoma which had deeply depressed almost the entire left upper parietal convolution was found connected with the dura. The diagnosis was, therefore, only partially correct, for while the tumor was in the parietal lobe it was not deep in the white matter. Early and intense headache and tenderness on percussion are common symptoms of dural tumors, and both were absent during the greater part, at least, of the duration of the symptoms. Transitory blindness, Bruns thinks, is not uncommon in cerebral tumors, and is probably due to pressure, possibly from a sudden increase in the internal hydrocephalus.

Bruns's¹ second case seems to strengthen the opinion that the parietal lobe is the seat of sensation, and especially of the so-called muscular sense. The fact that the patient used only the left arm, although the right was not paralyzed, was interesting. He explains this on the supposition that the pseudo-paralysis was due to the lesion of the greater part of the cortical sensory area.

Bruns² reiterates the statement that tumor of the frontal lobes does not cause the most intense psychic disturbances, but Fürstner (Strassburg) does not share this opinion. Psychic symptoms develop quickly

¹ *Neurologisches Centralblatt*, September 1, 1898, No. 17; and September 15, 1898, No. 18.

² *Centralblatt f. Nerv. und Psychiatrie, Beiheft*, October, 1898.

and in an intense form in frontal tumor, and, according to him, indicate that the frontal lobes are in especial relation to the intelligence, although all parts of the brain may be necessary for the full mental development of the individual. In parietic dementia, a disease in which mental failure is marked, the degeneration of the anterior parts of the brain unquestionably preponderates.

In this connection I must refer to an interesting case reported by Bailey.¹ The right frontal lobe was almost totally destroyed in a man at the age of forty-seven years, if we may judge from the clinical history, and yet marked disturbances of mentality or changes in character were not noticed. Bailey thinks the left frontal lobe assumed the functions of the right. This case is especially interesting on account of the age of the patient when the lobe was destroyed. Complete restoration of function after destruction of a large area of the brain is much less common in adults than in children.

On the other hand, Christison² reports a case of tumor of the frontal lobes which he compares with a similar case published some years ago by Francis, Starr, and Van Gieson. In these two cases, and in a monkey whose prefrontal lobes were removed by Bianchi, reduction of the power of attention, with indifference to things formerly and naturally of much interest, was noticed. These symptoms, however, have been noted in tumors located elsewhere in the brain.

OPERATION IN BRAIN TUMOR. Ferrier³ read an important paper at the last meeting of the British Medical Association on this subject. The statistics gathered from the literature leave us in doubt as to what is meant by recovery; but those taken from the National Hospital for the Paralyzed and Epileptic show that in 15 per cent. of the cases (38 in all) the patients died within a few hours or days after the operation; in 35 per cent. they died after some weeks or months; in 20 per cent. they lived some weeks or months, but the after-history is uncertain; in 30 per cent. they lived a year or more. The total immediate mortality of all operations for the removal of cerebral tumor amounts only to 18 per cent., as compared with 30 per cent. of complete and about 50 per cent. of partial recoveries after operation.

Byrom Bramwell, in the discussion of this paper, said that in 123 cases of intracranial tumor which had come under his observation, operation had been performed in 14, and in none of these had a tumor been successfully removed. He believed in operation after a reasonable time when drugs failed.

I think any one who has had experience in operation in cases of brain

¹ American Journal of the Medical Sciences, March, 1899.

² Philadelphia Medical Journal, January 21, 1899.

³ British Medical Journal, October 1, 1898.

tumor will acknowledge that only most carefully selected cases offer much hope from surgical intervention, but I believe that operation is justifiable when it offers a chance for life in a case which is almost certainly fatal without surgical intervention.

Hemiplegia. It is a well-known fact that in hemiplegia, when the face is involved, the palpebral fissure on the paralyzed side may be narrower than on the normal side. Mirallié¹ offers an explanation for this. According to him, it is due to a lesion of the cortical centre of the third nerve, which causes loss of tonicity, but not paralysis, of the elevator of the upper lid. This muscle has more independent action than any of those supplied by the third nerve, and, therefore, may be more affected in a unilateral central lesion of the third nerve.

I think this symptom may also in part be due to weakness of the frontal muscle from the paralysis of the seventh nerve and to drooping of the upper eyelid produced by the loss of tonicity in the frontal muscle.

Mirallié² has studied also the condition of the muscles innervated by the upper branch of the facial nerve in thirty cases of hemiplegia. The upper branch was always more or less involved in the hemiplegia when the lower branch was paralyzed; it was less affected than in peripheral lesions of this nerve, and often the paralysis was not very pronounced.

It is incorrect to say that the muscles innervated by the upper branch of the seventh nerve escape entirely in cerebral hemiplegia. I have seen considerable involvement of these muscles shortly after the commencement of the hemiplegia, but it is true that the involvement of the upper branch of the seventh nerve is not as prominent nor as persistent as in peripheral lesions.

Dejerine and Long³ say that hemianæsthesia of the special senses does not occur from a lesion situated at the posterior part of the internal capsule, as was taught by Charcot, although hemianæsthesia of general sensation does result from such a lesion. In almost all of the reported cases of capsular hemianæsthesia the thalamus was involved. Dejerine and Long have found, by a microscopical study of two cases, that a lesion of the posterior segment of the internal capsule when the thalamus is intact causes hemiplegia without hemianæsthesia. In order to have capsular hemianæsthesia the thalamus must be injured in its middle portion, especially in the posterior and lower parts, in its external nucleus, with or without involvement of the posterior segment of the internal capsule; or the thalamus, though intact, must be separated more or less completely from its cortical connections.

¹ *Comp. rend. de la Soc. de Biologie*, 1898, p. 736.

² *Ibid.*, and *Archives de Neurologie*, January, 1899.

³ *Comp. rend. de la Soc. de Biologie*, 1898, No. 41.

Sellier and Verger¹ seem to offer some support to Charcot's views. They have found that when the posterior part of the posterior limb of the internal capsule in the dog was destroyed, without involvement of the pyramidal tract and the adjoining gray masses, the sense of touch and the sense of position of the limbs were notably altered, and motor paralysis was not observed. The sense of pain was diminished during a few days following the operation. These disturbances of sensation were transitory.

CROSSED PARALYSIS is more frequently seen in involvement of the limbs of one side with the facial nerve of the other side, but occasionally the oculomotor is the nerve affected. It is customary to ascribe either form to a focal lesion in a definite position, but this type of hemiplegia may be due to multiple lesions. Bosanquet,² for example, reports a case of paralysis of the face on one side and of the limbs on the other. The weakness of the limbs of the left side was due to the presence of multiple carcinomata in the right cerebral hemisphere, and the right facial paralysis to an area of softening in the anterior limb of the left internal capsule. Carcinoma was also found in the lung. The paralysis on both sides almost disappeared, although the organic cause of it on the right side of the brain was probably actively progressing. There were no signs of hemorrhage into any of the growths causing a sudden increase of intracranial pressure, nor was there headache, vomiting, or optic neuritis.

CROSSED PARALYSIS OF SENSORY NERVES. This is far more rare than crossed paralysis of motor nerves; indeed, the former has received very little attention. Higier³ describes a case in which he observed anesthesia of the face and mucous membranes on the right side and of the trunk and extremities on the left side; paralysis of the muscles of deglutition, hoarseness, motor disturbance of the soft palate, tongue, and larynx on the right side; arrhythmia and increased rapidity of the pulse; loss or impairment of most of the reflexes from the mucous membranes and impairment of the special senses on the right side; tendency to fall toward the right side and slight ataxia of the left extremities. He believed that the cause of these symptoms was a circumscribed softening from thrombotic closure of a vessel in the right half of the medulla oblongata. It is to be regretted that this opinion was not founded on a necropsy.

CONTRACTURES, so commonly seen in hemiplegia, have been the subject of much study. Mann⁴ states that the theories are not entirely satisfac-

¹ *Comp. rend. de la Soc. de Biol. Séance, October 29, 1898.*

² *Lancet, July 16, 1898.*

³ *Deutsche Zeitschrift für Nervenheilkunde, vol. xiii., Nos. 3 and 4.*

⁴ *Monatsschrift für Psychiatrie und Neurologie, vol. iv., Nos. 1 and 2.*

tory, and that even the recent views of Van Gehuchten on this subject are not entirely acceptable. Contracture is not produced by any irritation of the motor cells of the cord, caused by secondary degeneration of the pyramidal tract, and it cannot be explained entirely by the removal of cerebral inhibition. He shows that all the muscles of a limb are rarely paralyzed in hemiplegia, and that those which retain a certain amount of power are the ones which contract. He believes that the excito-motor fibres of a group of muscles are closely associated within the pyramidal tract with the inhibitory fibres to its antagonizing group, so that when one group of muscles is stimulated to contraction, in voluntary movement, its antagonizing group becomes flaccid through stimulation of the inhibitory fibres. The contracture of hemiplegia is due not only to the relative integrity of the contracted muscles, but also to the destruction of the inhibitory fibres to the contracted group. This seems almost too simple to be correct.

MUSCULAR ATROPHY is also frequently seen in hemiplegia, and its causation is equally unknown. Marinesco¹ follows Schaffer in his statements that muscular atrophy is very common in organic hemiplegia, and he believes that it is chiefly due to loss of cerebral control over the sympathetic system, and is, therefore, largely of vascular origin. He found degenerative and atrophic changes in the muscles in cases of hemiplegia, but he found the intramuscular nerves normal in all except two out of sixteen cases examined by him. In only three of these sixteen cases was alteration of the cells of the anterior horns of the cord detected, and in two of these three cases the altered cells were not numerous. I have seen this rapidly developing atrophy in hemiplegia, and it cannot be explained by loss of function; if it is as common as Schaffer and Marinesco believe, it must often be overlooked.

HEMIPLEGIA FOLLOWING DIPHTHERIA. This has not been observed very often, and paraplegia is more common. Brannan² has described a case of hemiplegia from this cause, and he says there are thirty-five such cases recorded in medical literature. In these thirty-five only six necropsies have been obtained. In one of these a hemorrhage was seen in the lenticular nucleus; in the other five embolism of the Sylvian artery was found. The findings in these five cases suggest endocarditis as the cause of the embolism.

PROGRESSIVE HEMIPLEGIA IN THE AGED. A somewhat unusual form of hemiplegia is that to which Brissaud³ calls attention. He speaks of progressive hemiplegia occurring in the aged, with successive exacerbations, and due to multiple foci of softening from arteritis of the

¹ La Semaine Médicale, November 23, 1898, No. 58.

² Medical Record, July 30, 1898.

³ Revue Neurologique, August 30, 1898.

small vessels. He describes a case of progressive hemiplegia occurring without any sudden attack and becoming complete within a month in a man of forty-seven years. The necropsy showed a large area of cortical softening. Transitory hemiplegia is well recognized as a symptom of arterio-sclerosis, and we at times see such cases in the aged.

HEREDITARY. The occurrence of hemiplegia in certain families has been noted, and it has seemed to me probable that a diseased condition of the vessels is inherited, but the occurrence of hemiplegia in father and child, as reported by Placzek,¹ is unusual. The father was paralyzed in his fourth year; the child when about two years old. Placzek regards the condition of the child as hereditary, although the paralysis developed with convulsions, fever, etc. Some doubt in regard to the correctness of this view may be entertained. The report sounds somewhat like that of a case of encephalitis.

Hemorrhagic Encephalitis. We hear much now in regard to the non-purulent form of encephalitis, and it seems that the condition may be more common than was believed to be the case some years ago. Allen² gives an excellent review of the etiology, symptomatology, pathology, and treatment of acute hemorrhagic encephalitis, and reports two clinical cases.

The acute hemorrhagic polioencephalitis superior of Wernicke and the acute hemorrhagic encephalitis of Strümpell were supposed to be two very different diseases. More recently the attempt has been made, chiefly from clinical observation, to classify these diseases as one process. This, Deiters³ thinks, should not be done. Strümpell found groups of round cells, of which Wernicke makes no mention; but, on the other hand, Wernicke describes granular cells which were not seen by Strümpell, and a few other differential points are mentioned. Deiters describes a case of hemorrhagic encephalitis in which the primary lesion was venous thrombosis. It seems to me doubtful whether Deiters's objections are well sustained, and I am inclined to regard the two processes as similar.

Köppen⁴ reports three cases of hemorrhagic encephalitis occurring in adult life. Usually the disease develops in youth. In the discussion on this paper, Oppenheim referred to a case which demonstrated the possibility of recovery from the non-purulent form of encephalitis. He made the diagnosis of acute hemorrhagic encephalitis in a case in which the symptoms of the disease disappeared. The patient died later from cerebro-spinal meningitis, and Oppenheim was able to find scar-tissue—

¹ Berl. klin. Wochenschrift, July 25, 1898.

² Philadelphia Medical Journal, August 27, 1898.

³ Neurologisches Centralblatt, August 15, 1898.

⁴ Berlin. klin. Wochenschrift, July 25, 1898.

the remains of a hemorrhagic focus—in the area in which he had clinically located the encephalitis. He refers to the possibility of a relation between these foci of healed encephalitis and multiple sclerosis.

This possibility certainly exists, and it may be that healed encephalitis is the cause of other pathological conditions found in the brain, such, for example, as atrophic gyri consisting largely of sclerotic tissue.

Friedmann¹ believes that circulatory disturbances of the brain and non-infectious emboli may produce encephalitis, but that influenza is the best known cause. He reports a case in which during life the diagnosis lay between embolic softening of the brain and cerebral abscess. A cyst, the size of a walnut, connected with the lateral ventricle, was found in the frontal lobe, and was believed from the microscopical examination to be due to encephalitis. The findings in this case were hyperemia, numerous hemorrhages, groups of round cells, areas of softening, cystic formation, influenza bacilli (?), and micrococci within the wall of the cyst, proliferation of tissue, etc. Friedmann believes that recovery may occur in the hemorrhagic period, provided the destruction of tissue is not too great, a belief which is justified by Oppenheim's findings, as cited above.

Paretic Dementia. According to Mendel,² the "typical" form of paretic dementia, with ideas of grandeur and states of excitement, is not as common as formerly, and dementia now occurs more frequently. Long remissions are more often seen. The disease is more common, and females are more often victims than they were some years ago; the disease also develops in youth more frequently. The greater frequency of the malady is probably due to the more common occurrence of syphilis. Excellent articles on paretic dementia have been written recently by Sachs,³ Patrick, and Paton.

The disease is rare at the age of puberty, but does occur. Stewart⁴ reports three cases in boys fifteen, sixteen, and seventeen years old, respectively, one case being with necropsy. He has collected the records of fifty cases of paretic dementia occurring in childhood and adolescence, exclusive of his own cases. The age of puberty seems to be a critical period in children of syphilitic taint. The sexes are equally affected when the disease develops early, but when it appears later in life males are more frequently affected. In the great majority of cases occurring in childhood inherited syphilis has been noted, and not infrequently no other distinct evidences of syphilis are found in the patient. In at least three cases acquired syphilis was recorded.

¹ *Deut. Zeitschrift für Nervenheilkunde*, vol. 14, Nos. 1 and 2.

² *Centralbl. f. Nerv. und Psychiatrie*, Beiheft, 1898, p. 655.

³ *New York Medical Journal*, 1898, vol. ii.

⁴ *Brain*, part lxxxii., Spring, 1898.

Nissl¹ thinks that the following four conditions occurring simultaneously in the same person render the diagnosis of parietic dementia exceedingly probable: (1) Disappearance of the diploë. (2) Thickening and clouding of the membranes, characterized by the extent rather than by the intensity of the process. The meninges over the occipital pole are not involved, while those over the frontal and parietal lobes are. The cloudiness may be only in spots. The membranes may be adherent to the cortex. (3) Internal and external hydrocephalus. (4) Atrophy of the frontal and parietal lobes on the convexity and median surface.

Epstein² examined the cerebral cortex in a case of general paralysis, in one of tabes and in one of tabo-paralysis. He found a considerable disappearance of medullated fibres in all three brains, which was greatest in the case of general paralysis, and least in that of tabes. In general paralysis and tabo-paralysis the disappearance was more uniform in extent, whereas in tabes the posterior part of the cortex was more involved. It is doubtful, however, whether this difference will be found to exist when more cases are studied. The atrophy in these cases was not confined to the tangential fibres.

General Paralysis after Trauma. It is believed that this may occur. The case, therefore, reported by Bresler,³ which in many of its features resembled general paralysis, is interesting. The symptoms developed after an injury to the head. The epileptic attacks, he thought, could have been due to cerebral concussion and chronic alcoholism, or to a splinter of bone in the brain or its membranes, or they could have been symptoms of general paralysis or of tumor. The necropsy showed that the diagnosis of parietic dementia was incorrect. Intense internal hydrocephalus, ependymal granulations, and cloudiness of the pia at the base of the brain were found. He states that a condition of mental confusion with motor paralysis and disturbance of speech and writing, closely resembling that of general paralysis, is not very uncommon in epilepsy. Cloudiness of the membranes and the ependymal granulations are common findings in chronic alcoholism, and cause internal hydrocephalus. Alcohol produces hyperplasia of the epithelium of the choroid plexus and of the ependyma, and makes the epithelium less resistant to the passage of fluid. Bresler believes that there is no such thing as idiopathic internal hydrocephalus of adults. In the majority of cases either a pathological cause has been found, or the etiology, such as trauma, alcoholism, etc., has been recognized during life.

Delirium Tremens. We would naturally expect changes to occur in the cortical cells in cases of delirium tremens, and we are not sur-

¹ *Centralblatt für Nervenheilkunde und Psychiatrie*, Beiheft, 1898.

² *Monatsschrift für Psychiatrie und Neurologie*, October, 1898.

³ *Neurologisches Centralblatt*, September 15, 1898.

prised to learn that Trömmner,¹ in seven cases of delirium tremens which came to necropsy, found changes in the vessels, in the glia, in the nerve fibres and nerve cells of the cortex, and in the cells of the spinal cord and spinal ganglia. The anterior portions of the brain were more affected than the posterior. The cellular changes did not correspond to those found in animals poisoned by alcohol, and were in part due to chronic alcoholism, in part to the delirium tremens.

Epidemic Cerebro-spinal Meningitis. Councilman, Mallory, and Wright have done such splendid work on epidemic cerebro-spinal meningitis that the Harvard School deserves much credit for advancing our knowledge of this disease. Wentworth² publishes from the Sears Pathological Laboratory an excellent succinct account of the pathology, symptomatology, prognosis, and treatment of epidemic cerebro-spinal meningitis, which is too full of detail to permit of more than a reference.

Internal Hemorrhagic Pachymeningitis in Children. Herter³ has done good service in calling attention to this condition, and in reporting two cases. The condition is one relating to early infancy, and the majority of children in whom the lesion has been found were badly nourished or cachectic. Rickets, chronic intestinal catarrh, and syphilis have etiological importance. The pathology of the affection is unknown. The diagnosis of the condition can hardly be made with confidence. When the hemorrhage is large, rigidity, convulsions, and coma are common symptoms; but if the hemorrhage occurs slowly, convulsions may be absent, and rigidity and deepening coma constitute the only symptoms. A number of diagnostic points are mentioned, but similar symptoms may occur in pial hemorrhage or acute infection without a cerebral lesion.

I have had a case of internal hemorrhagic pachymeningitis in a child of nine years which will be reported in collaboration with Dr. McCarthy. It seems to be the only case on record occurring in so old a child.

Localized Subarachnoid Œdema. Another interesting pathological cerebral condition has been emphasized by Walton.⁴ He points out that the cerebro-spinal fluid, as a result of trauma to the head, may collect beneath the subarachnoid membrane, somewhat in the form of a blister, and produce the symptoms of cerebral hemorrhage. This may occur at the point of injury or on the opposite side of the head by contrecoup. When the accumulation of fluid occurs in the motor area paralysis may result, and this paralysis does not last more than a few days. An atypical course, absence of steadily increasing coma, and sensitiveness to pain on manipulation of the head, even in deep unconsciousness, he regards as favoring the diagnosis of localized subarachnoid œdema. Paralysis follow-

¹ Arch. f. Psych., vol. xxxi., No. 3, p. 700.

² Lancet, October 1, 1898.

³ American Journal of the Medical Sciences, vol. cxvi.

⁴ Ibid., September, 1898.

ing a blow upon the head does not always demand surgical intervention, and when unconsciousness does not deepen and other cerebral symptoms do not progress, operation may be delayed, except, perhaps, an exploratory one. The condition of localized subarachnoid oedema is especially to be borne in mind in the case of children and young adults.

Miliary Sclerosis in the Brain. A typical case of advanced senile dementia has been reported by Redlich.¹ The brain was atrophied, especially in the frontal and temporal lobes, and in the latter lobes areas of miliary sclerosis were numerous, but only in the cortex. The remains of neuroglial cells or of ganglion cells were found in the midst of many of these sclerotic areas. Such sclerotic foci have been observed in a few other cases. In addition to these lesions, Redlich found numerous spider cells, atrophied or deeply pigmented ganglion cells, and diminution in the number of ganglion cells and nerve fibres, but these are characteristic lesions of senile atrophy.

We do not understand the origin or symptomatology of such multiple sclerotic areas. It seems proper to bring them into connection with the bloodvessels in some way; but why, then, are they not observed more frequently?

Hypertrophic Nodular Gliosis. No satisfactory explanation has been found for the origin of this affection. Sailer² has made a careful examination of the literature, and reports a case of this disease. All the cases have been in epileptics, and it seems probable that these sclerotic cortical areas act as foci of irritation in the production of epileptic convulsions.

Arterio-sclerosis of the Nervous System. The involvement of the nervous system in arterio-sclerosis is sometimes very marked. Three clinical cases are reported by Kovalevsky.³ In all three he found sclerosis of the arteries of the eye-grounds, of the temples, and of the upper extremities, enlargement of the left ventricle, accentuation of the second sound, slow pulse, ringing in the ears, more or less vertigo, sensations of fainting, attacks of anxiety, impaired hearing, failure of memory, sleeplessness, constipation, feeble intelligence, syllable stuttering, apoplectic-form attacks, with loss of consciousness and even persisting paralysis, and inco-ordination in walking.

Amaurotic Family Idiocy. Peterson⁴ and Hirsch⁵ have each published the report of a necropsy in a case of amaurotic family idiocy. Peterson found a condition of defective development; the nerve cells of the cortex and medulla oblongata were deficient in number and develop-

¹ *Jahrbücher für Psychiatrie und Neurologie*, vol. xvii., Nos. 1 and 2.

² *Journal of Nervous and Mental Disease*, June, 1898.

³ *Neurologisches Centralblatt*, August 1, 1898.

⁴ *Journal of Nervous and Mental Disease*, 1898.

⁵ *Ibid.*

ment. Hirsch observed a peculiar tumefaction and chromatolysis of the nerve cells throughout the central nervous system, and he believes that this was due to a poison, possibly absorbed through the mother's milk. Holden¹ found the nerve cells of the retina much altered in Hirsch's case. These examinations increase our knowledge of the pathology of the disease, but Hirsch's findings are remarkable, and it is questionable whether they are peculiar to this disease; indeed, such changes were found in the case of internal hemorrhagic pachymeningitis before referred to, and Hirsch does not assert that they are found only in amaurotic family idiocy.

Cortical Blindness. A number of cases of complete cortical blindness, with the restoration of a small central field, have been reported, but in none was the field so small as in a case reported by Gaupp.² No necropsy was obtained in this case, and the nature of the lesions was unknown. The case shows, according to Gaupp, that the impairment in the sense of orientation, seen in a number of cases of bilateral cortical blindness, need not be proportionate to the impairment of cortical vision.

Periodic Oculomotor Palsy. This has not been often observed, and the cause is obscure. A case of periodic exacerbating paresis of the ocular muscles has been reported by von Bechterew,³ and the symptoms at times almost disappeared or became much less in intensity. The muscles supplied by both third nerves were affected. In all previously reported cases the periodic paralysis of the oculomotorus has only been observed on one side. When the patient's attention was not directed to her eyes the palpebral fissure was of more nearly normal size.

Head Injuries. Laplace⁴ says that all cases of injuries to the skull are dangerous until distinctly proved to be the contrary. Symptoms do not develop immediately after the trauma, and every case should be kept under observation for at least twenty-four hours, and if symptoms of compression of the brain develop, measures should be immediately taken to afford relief. This is excellent advice, for fracture of the inner table of the skull may occur without fracture of the outer, and we must remember this when we are in the presence of a case of apparently cerebral concussion. As an instance, a case reported by Standage⁵ may be cited: A man was shot in the head, and though the bullet did not fracture the outer table of the skull, the inner table was found fractured, and a clot of blood from venous oozing pressed upon the dura.

The brain occasionally may be injured very greatly and yet suffer comparatively little loss of function. The case reported by Barritt⁶ is

¹ Journal of Nervous and Mental Disease, 1898.

² Monatsschrift für Psychiatrie und Neurologie, vol. v., No. 1.

³ Deutsche Zeitschrift für Nervenheilkunde, Band xiii., Heft 5 and 6.

⁴ Philadelphia Medical Journal, April 30, 1898.

⁵ Lancet, November 26, 1898.

⁶ Lancet, January 7, 1899.

worthy of ranking with the famous crowbar case. A gun, while being loaded, exploded, and the iron ramrod was driven through a boy's head, entering the head three-quarters of an inch above the centre of the left eyebrow and leaving it in the centre of the left parietal eminence. The ramrod was found about fourteen yards from the spot where the boy fell. Considerable mental disturbance was at first produced by the injury, and paralysis of the right arm was observed. The accident occurred July 20, 1898, and at the time the report was published the boy was said to be in perfect health, his mental faculties seemed to be quite intact, and he had practically perfect use of his arm. The speech was never impaired. We might expect epilepsy to develop later in a case of this kind.

Aphasia. A remarkable case of agraphia without any other form of aphasia is published by Gordinier.¹ The patient understood all that was said to her, spoke without hesitation (at first), and always correctly, and had no alexia. A glioma was found in the foot of the second left frontal convolution, and was distinctly separated from the arm centre by the precentral sulcus. Its longest *cortical* diameter was 2 cm., but it extended downward and inward in the centrum semi-ovale as far as the roof of the anterior corner of the lateral ventricle, and forward to near the apex of the frontal lobe, and involved the white matter of the first frontal convolution toward the ventral part. It was, therefore, a tumor of considerable size, and it is extraordinary that no symptoms of motor aphasia were produced by pressure on Broca's region. As the case developed slowness of speech was noticed, "not in any sense aphasic in character, as all questions were answered correctly." We are justified in asking whether every means was employed to detect paraphasia—whether the patient had no difficulty in uttering the desired words. I have recently had a case in which this difficulty of uttering the desired word was distinctly present, and at the necropsy a tumor was found in the first frontal convolution and upper part of the central convolutions of the left side and encroached somewhat upon the upper part of the second frontal convolution. The slight symptoms of motor aphasia must have been due to pressure.

Gordinier's case is a most extraordinary one, and it is to be regretted that microscopical serial sections through the hemisphere were not made. An area of softening which only the microscope can detect may be found about a tumor.

I know of no satisfactory explanation for loss of sensation without loss of motion from a lesion in the motor cortex. Mann² reports a case of this kind, in which the loss of sensation without loss of motion

¹ American Journal of the Medical Sciences, May, 1899.

² Monatschrift f. Psychiatric u. Neurologie, vol. iv., No. 5.

in the left thumb and index finger seemed to be due to a cyst in the lower part of the right arm centre (in the lower part of the middle third of the anterior central gyrus). Amusia, which was observed, was thought to be due, possibly, to the involvement of the second frontal gyrus by the cyst, but the location of the lesion in the right hemisphere of a right-handed person seems to me to make the correctness of this view doubtful.

The cases of word-blindness without letter-blindness I have thought were explicable on the ground that letters are usually learned first, and that the visual images of these are more permanent, and I have held that it is not necessary to assume that visual word images and visual letter images are stored in different parts of the cortex. Hinshelwood,¹ however, reports a case in which the patient could read almost every word presented to him, but could neither read nor write a single letter of the alphabet except "T" (his name was Tom). He could read substantives better than verbs. Slight intentional mistakes in spelling and reversal of letters were not noticed by the patient, who read the words unconscious of the changes. He was not amusic. Hinshelwood is able to refer to five cases in which the patient could read words but not letters. He believes that visual memories of words and letters are distinct, and are stored in different but contiguous areas of the cerebral cortex, and that one may be lost without the other. Children are now often taught to read words before letters, and in persons so educated the existence of letter-blindness without word-blindness could be explained, as I have indicated above. It is probable that in most of the cases mentioned by Hinshelwood this method was not used, and Hinshelwood's explanation seems plausible.

Bramwell² reports what he well calls "a remarkable case of aphasia." The chief defect was an inability to name persons and objects. There was also a considerable degree of agraphia and paragrammia, a certain though slight degree of word-blindness, and some difficulty in reading aloud, which was, perhaps, a motor defect. No motor-vocal aphasia seemed to be present, except for naming objects and persons. There was no word-deafness. The man had always been right-handed. There was no muscular paralysis and no hemianopsia. Some improvement occurred. A necropsy was obtained and Broca's area was found to be destroyed. A point which Bramwell emphasizes is, that in this patient, who was a right-handed man, acute and complete destruction of the left motor-vocal speech centre (Broca's convolution) and of the anterior end of the left island of Reil merely produced a very temporary motor aphasia, and did not produce complete and persisting motor-vocal aphasia.

¹ *Lancet*, January 14, 1899.

² *Brain*, Autumn, 1898.

Bramwell believes that the case proves (1) that acute and complete destruction of Broca's convolution in a right-handed person does not necessarily produce complete and persisting motor-vocal aphasia, but that in exceptional cases such destruction may merely cause a very temporary and slight degree of motor-vocal aphasia; (2) that in right-handed persons the "way out" for speech is not necessarily and invariably through Broca's convolution. In Bramwell's case the cortical centre in the right hemisphere, corresponding to Broca's convolution, was believed to be more highly educated than it is in the great majority of right-handed people, and to be able to immediately carry on the functions of the left motor-vocal speech centre. Bramwell believes that the right cerebral hemisphere has more to do with speech than is usually taught, and that the speech centre and speech functions are bilaterally represented in the brain, but not to the same extent in each hemisphere. The inability to name persons and objects is not so satisfactorily explained.

This case will be employed as a proof of the existence of a naming centre (Mills). Collins has emphasized the fact that a person may be born left-handed, with the speech centre in the right hemisphere, and that training may hide the natural left-handedness. We cannot be certain in regard to the symptoms that would be produced in such a person by a lesion in Broca's area, but it may be that the region in the right hemisphere corresponding to Broca's zone is really the important centre of motor speech in such a person.

Another interesting case in which Broca's convolution was completely destroyed by a neoplasm in a right-handed person, without the production of aphasia, has been reported by Collier.¹ It seems to show that right-handedness does not necessarily mean that the third left frontal convolution is most active in the production of articulate speech. There was no instance of left-handedness in the family history of the patient. The explanation which I have borrowed from Collins does not seem as applicable to this case, although, of course, this patient might have been left-handed, though all the other members of the family were right-handed.

The following case is well worthy of note as an instance of word-deafness, with necropsy: A man fell and was unconscious for about fifteen minutes, then recovered, walked home, talked, read, and apparently had no serious disturbance. After a few days he evidently had difficulty in hearing, and the deafness increased. The speech became much disordered. Examination made two days after the fall showed that the hearing of sounds was excellent but that of words completely lost. Reading and writing were not tested. Verbal and literal para-

¹ *Lancet*, 1899.

phasia was observed. Death occurred four days after the accident. Fracture of the base of the skull was found, and a hemorrhagic focus was seen in the point of the left temporal lobe. This focus extended backward and downward. Bloch and Bielschowsky¹ think the case proves that a lesion of the anterior portion of the first and second temporal gyri can cause word-deafness, and that involvement of the posterior part of these gyri is not always present when word-deafness exists. I am not certain that the effects of pressure were excluded, and the failure to test the power of reading is much to be regretted.

Abadie² reports an interesting case of pure motor aphasia: A man, hemiplegic on the right side, presented all the signs of pure motor aphasia. External speech amounted only to the utterance of a few incomprehensible sounds. He knew what he wished to say, and could indicate by gestures the number of syllables or letters in the words which he could not pronounce. He understood perfectly what was said to him, and could write some words voluntarily from dictation or from copy. The necropsy showed multiple lesions, but Abadie excludes all as having causal relation to the aphasia, except two situated symmetrically in the cerebral hemispheres, which destroyed the anterior part of the internal capsule on each side.

Abadie thinks the name of subcortical motor aphasia is not wisely chosen. This symptom-complex is not a true form of aphasia, and is not always subcortical, but may be due to lesions in the cortex, under the cortex, or in the internal capsule. This symptom-complex should be spoken of as dysarthria or anarthria. Unilateral destruction in either hemisphere of the cerebral motor fibres for the tongue and larynx causes transitory and slight disturbance of articulation, because the centres on the sound side functionate in place of the destroyed ones. When the lesion is bilateral, especially when it is in the internal capsule and destroys completely the motor fibres of the tongue and larynx in each hemisphere, no restoration of speech is possible.

Destructive lesions of the internal capsule do not cause true aphasia. If they are unilateral they may cause transitory dysarthria; if bilateral the anarthria is persistent.

I fully sympathize with the desire to avoid the word "subcortical," for it has been shown that the so-called subcortical word-deafness may be due to a cortical lesion. Dejerine's term "pure" is more applicable.

Epilepsy. Herter³ has tested the toxicity of the blood of epileptic patients, but his results are not conclusive. The evidence does not indicate any increase in the toxic properties of the blood in most of the cases

¹ *Neurologisches Centralblatt*, August 15, 1898.

² *Revue Neurologique*, July 30, 1898.

³ *Journal of Nervous and Mental Disease*, 1899, p. 72.

of epilepsy, either immediately after the seizures or in the intervals. We must acknowledge, I fear, that we understand the etiology of epilepsy very imperfectly, and must content ourselves with theories.

Sinkler¹ does not think any case of epilepsy can be considered cured, for convulsive attacks may recur at any time. This view is justified by the facts. I also have seen patients in whom the remissions extended over a number of years, in one case over many years, and the question as to whether these relapses shall be considered as relapses or as manifestations of a new disease seems to me more a fight over words than over facts.

Higier² has described a form of epilepsy which has been largely neglected. He reports a second case of epilepsy, with attacks of paralysis lasting ten to twenty-five seconds. This temporary weakness seems to be an epileptic equivalent. We can hardly fail to be struck by the resemblance between this form of epilepsy and periodic family paralysis, though in many points the differences are considerable. The paralytic attacks in Higier's patient were not associated with convulsive seizures or loss of consciousness. McConnell has observed a case very similar to those of Higier, and read his paper before the Philadelphia Neurological Society in 1899.

Hughlings Jackson³ describes a patient who had *hant mal*, but had also in slight attacks the "dreamy state," called also "intellectual aura." In some of his seizures there were certain movements of the mouth and tongue—tasting movements. After some of the slight attacks very elaborate actions were observed during "unconsciousness." A small cavity was found by Colman in the left uncinate gyrus.

v. Bechterew⁴ says that attacks of anxiety are not rare in epilepsy, and may occur as an aura or as an epileptic equivalent, and they may be the most important sign of epilepsy. Usually in these attacks of anxiety there is no vertigo and no loss of consciousness. They differ from the neurasthenic attacks of anxiety, in that the latter are related to external causes, such as thunder, places, or crowds. It is well to remember in this connection that Freud and Morton Prince have each described a neurosis in which fear is the essential feature.

STATUS EPILEPTICUS. The cause of death in status epilepticus has not been definitely known. Weber⁵ has found in a number of cases in which death occurred while the patients were in this condition, engorgement with hemorrhage in most of the organs of the body, especially in the lungs, liver, kidneys, and heart; acute fatty degeneration of the three

¹ Journal of Nervous and Mental Disease, 1898.

² Deutsche Zeitschrift f. Nervenheilkunde, vol. xiv., Nos. 3 and 4.

³ Brain, vol. xxi. p. 580.

⁴ Neurologisches Centralblatt, 1898, No. 24.

⁵ Münch. med. Wochenschrift., October 4, 1898, No. 40.

last-mentioned viscera and recent and old vascular disease. Similar changes were found in the brain. The vascular disease of the medulla oblongata, he thinks, is probably the direct cause of death in many cases.

Death from an injury received during an epileptic attack is, fortunately, not so common as might be expected. Wille¹ observed a case of hematomyelia of the cervical region resulting from an epileptic seizure and fall upon the head. He discusses also the subject of artefacts of the spinal cord, and classes the so-called spinal neuromata among these artefacts.

It is a striking fact that in fifty cases of genuine epilepsy with microscopical examination, the cornu ammonis was found diseased unilaterally by Bratz² twenty-four times and once bilaterally, and the alteration was almost always of the same character. Bratz is unable to state the significance of these findings.

Hochhaus³ found calcification of the small vessels of the brain, especially in the left central gyrus and horn of Ammon, in an epileptic person of twenty-eight years. This vascular disease he regarded as the cause of the epilepsy. It is probably wise to say that there is no *cause* of epilepsy, but that the causes are many—in all probability it is as complex a disease as hysteria.

Beadles thinks that a case which he reports is evidence of the location of the centre for the movements of the small toes. We must remember that in cases in which cysts are found, just as in those with tumors, the effects of pressure may be exerted at some distance from the seat of the gross pathological lesion.

Beadles⁴ records the occurrence of numerous epileptic attacks in a youth in whom the right leg was especially affected. The right foot was drawn up at the ankle and the toes were contracted. When the patient walked he dragged this foot and bore his weight on the left leg. When he attempted to run, which he often did in advance of a fit, his right foot seemed to trip him up. When the fit began he seemed to suffer much pain in the leg, and when he recovered from the attack the toes were more contracted than usual. The whole brain was reduced in size, but the left cerebral hemisphere was smaller than the right. A small cyst was found on the upper and hinder part of the parietal lobe of the left cerebral hemisphere, in the site representing the area attributed to the centre for the movements of the small toes.

It is probable that different diseases are included under the term epilepsy, but there is one form of so-called genuine epilepsy, studied by

¹ Archiv f. Psychiatrie, vol. xxxi., No. 3.

² Ibid.

³ Neurologisches Centralblatt, November 15, 1898, No. 22.

⁴ Brain, part lxxxi., Spring, 1898.

Chaslin and others, which is due to sclerosis of the cortex. Alzheimer¹ reports two cases. He says that the changes in this form of epilepsy consist of proliferation of the glia with a tendency to a normal arrangement of the fibres, and considerable degeneration of nerve fibres and ganglion cells throughout the cerebral cortex.

Prus² has made some interesting experiments leading to remarkable conclusions. He believes that the pyramidal tracts are not necessary for the transmission of the irritation producing epileptic attacks, and that bilateral epileptic attacks occur even when nearly an entire cerebral hemisphere has been removed. He believes that "extra-pyramidal" motor tracts exist and pass down through the tegmentum or substantia nigra of the midbrain, and that the epileptic convulsions are dependent on the integrity of these tracts. Prus's experiments were made on dogs, and we may well be a little cautious in applying these results directly to man. What is true of a lower animal is not always true of man, and much caution is needed, especially in judging of the motor tracts.

TREATMENT. Almost every new drug seems to be of some service in the treatment of epilepsy. Rohrmann³ has experimented with bromalin, and finds that it is useful in epilepsy. In three cases it controlled the convulsions better than the bromide of potassium. It is palliative, not curative, and when discontinued the attacks return. He recommends its use. The drug is to be obtained from E. Merck, in Darmstadt.

Wright⁴ has been unable to find any account in literature of changes in the cortical nerve cells of man or the lower animals from the administration of bromide of potassium. A patient who was unintentionally poisoned by this drug afforded him an opportunity for the investigation of the condition of the cortical cells. Rabbits also were poisoned with bromide as control tests. The cortical nerve cells presented marked alteration, and the supporting and vascular tissues were not normal. Bromide of potassium is depressant on the cortex cerebri, and lowers the activity of the motor cells. The microscopical appearances in these cerebra showed that toxic doses of the salt, repeated at short intervals, injure greatly the cortical gray matter. The bromide acts principally upon the protoplasmic processes of the cells. We may possibly have here an explanation for the evil effects of the prolonged employment of the bromide.

¹ *Monatsschrift für Psychiatrie u. Neurologie*, vol. iv., No. 5.

² *Wiener klin. Wochenschrift*, September 22, 1898.

³ *Monatsschrift f. Psychiatrie u. Neurologie*, Band iv., Heft 6.

⁴ *Brain*, part lxxxii., Summer, 1898.

ANATOMY OF THE BRAIN.

The Anatomy of the Lower Parietal Gyri. v. Monakow¹ writes on this subject with the thoroughness which is characteristic of him. Little is known concerning the function of this portion of the brain. Disturbance of muscular sense is the most common sign of lesions in the supramarginal gyrus, and hemianæsthesia is also observed occasionally ; but further investigation in regard to these statements is much needed, for it is possible that these disturbances are due to involvement of the inner capsule. Conjugate deviation of the eyeballs to the opposite side is more common after lesions of the supramarginal gyrus than elsewhere in the cortex, but does not always occur. Lesions of both angular gyri usually cause mind-blindness and sensory aphasia, and v. Monakow says that when the lesion is confined to the left angular gyrus pure alexia with hemianopsia may occur. The text leaves us in some doubt as to whether this hemianopsia is due to involvement of the deeper lying optic radiations or not, though it probably is due to such involvement. v. Monakow combats Flechsig's theories, and states that projection fibres of the supramarginal and angular gyri may be seen in the brain of a child three and a half months old. Most of the projection fibres from the retrolenticular part of the inner capsule belong to the lower parietal lobe. This would seem to be a confirmation of the view that sensory fibres are located in this part of the inner capsule, inasmuch as evidence exists in favor of the representation of the muscular sense in the lower parietal lobe.

Flechsig's Centres. Since Flechsig² first propounded his views of the anatomy of the brain a pitched battle has been waged between the neurologists. He has received little support outside of his own school. His statements may be said to be among the most remarkable that have ever been uttered in relation to cerebral anatomy, and if confirmed will be considered epoch-making. Flechsig now distinguishes forty cortical areas in place of the nine which he formerly described, depending on the time at which they receive their medullary substance. Further study may show that this number is not correct. These areas are natural, not artificial, divisions, and represent, in a measure at least, the locations of different functions ; they vary somewhat in extent in some brains. The phrenologists may now hope for a new lease on life, since Flechsig has furnished them a scientific basis for their doctrines. Flechsig himself says : " In these findings are doubtless the beginning of a true individual comparative anatomy of the human brain-surface and the foundation of an exact phrenology."

¹ *Archiv für Psychiatrie*, vol. xxxi., Nos. 1 and 2.

² *Neurologisches Centralblatt*, November 1, 1898.

Siemerling,¹ from a study of twelve human brains representing various periods of development, reaches conclusions very different from those of Flechsig, and believes that the association centres contain many projection fibres.

I have felt that questions of interest only to the anatomist were out of place in this digest, but before leaving the subject I must refer to the excellent series of papers by Baker which have appeared in a recent number of the *New York Medical Journal*.

DISEASES OF THE SPINAL CORD.

Tabes Dorsalis. The question as to the possibility of tabes resulting from trauma has never been satisfactorily settled. Trömner² reports two cases, with trauma as a possible cause. A man, forty-two years old, not infected with syphilis, received a severe injury in the left foot, and suffered much pain in this part. Lack of sexual power and of micturition were noticed eight weeks later, and after about nine months the patient experienced pain and weakness of the left foot. Other symptoms of tabes developed. The wife had been in an insane asylum, and had pupillary rigidity and Westphal's sign. Traumatism as a cause in the second case was more doubtful, and the clinical history of the wife of the first patient is suggestive of syphilis. Trömner thinks that all other possible causes than trauma should be excluded; that the tabetic symptoms should follow soon after the injury has been received, and that the symptoms should begin in and predominate in the injured part of the body. Even when all these requirements have been met we should be very cautious in accepting trauma as a cause of tabes. The cases which Trömner reports are by no means conclusive.

No subject in neurology has been more discussed than the relation of syphilis to tabes. Guttman³ brings forward arguments to prove that tabes is not due to syphilis. Syphilis is exceedingly common in Berlin, while tabes is not. In the island of Jeddo syphilis was found to form about 10 per cent. of all diseases in 60,000 cases, and yet among these patients tabes occurred only five times, and only once in a patient in whom syphilis could be demonstrated. Tabes is rare in Bosnia; syphilis is common. Tabes is rare among negroes; syphilis is common. Guttman includes all classes in his statistics. In 36 tabetics syphilis was certain, in 69 syphilis could certainly be excluded, and in 6 cases syphilis was doubtful. Syphilis was excluded in 25 cases of tabes found in

¹ Berl. klin. Wochenschrift, 1898, No. 47.

² Ibid., 1899, No. 7.

³ Zeitschrift für klin. Med., Band XXXV., Heft II and I.

the records of a life insurance company, and in these records the facts had been most carefully elicited. Guttman mentions a case of tabes in which the patellar reflexes were preserved until death, and the posterior roots only in the thoracic region were diseased; the lumbar cord was normal. He believes that the mercurial treatment of tabes does not benefit the patient, and may injure him. This paper comes from Leyden's clinic, which accounts in part for the views held by the author. Leyden has for some years combated the views regarding the syphilitic etiology of tabes.

The condition of the foot known as *piéd tabétique*, or Chinese foot, is very rare, but a case has been reported by Jacob.¹ A Röntgen ray picture of this foot is the first of the kind reported in literature. It showed that the deformity consisted of hypertrophy and atrophy of bone, and was not due merely to disease of the joints or to contracture. The process is, therefore, an osteo-arthritis.

Muscular atrophy may be excessive in tabes, and two clinical cases of this kind have been reported by Whiting.² The subject was studied thoroughly some years ago by Dejerine. It is usually a late sign of tabes, although it has been observed in the preataxic period. Chrétien and Thomas³ report two cases in which muscular atrophy was very evident, and one of these is of unusual interest. A woman in a state of relatively good health was suddenly affected with a giving way of the legs, which was followed by progressive weakness of the lower limbs, depending on muscular atrophy, the evolution of which was so rapid that flaccid paraplegia developed within a year. The only other sign of tabes was the Argyll-Robertson pupil. The posterior columns of the cord were found sclerotic, and the cells of the anterior horn were much altered in the lumbosacral region; this latter condition was probably the cause of the muscular atrophy. The case seems to have been a combination of tabes with anterior poliomyelitis, and was extraordinary in its clinical appearance, in the alteration of the cells of the anterior horns, and in the relative integrity of the peripheral nerves.

Pineles⁴ has reported two cases in which gastric crises preceded all other symptoms of tabes for two and two and a half years respectively. A case of this kind would be very liable to receive a wrong diagnosis.

Not infrequently we see tabetic patients who have lost several teeth, in whom the teeth have become loosened and have been pulled out without pain. I have had three such patients within a comparatively short period of time. Necrosis of the jaw is much more rare as a sign of

¹ Berl. klin. Wochenschrift, 1898.

² Brain, vol. xxi, p. 494.

³ Revue de Médecine, November, 1898.

⁴ Wiener klin. Wochenschrift, 1898, No. 52.

tabes. Laspeyres¹ adds one more case to those (about twenty-six, according to his figures) reported in the literature.

The absence of the knee-jerk is one of the most common signs of tabes, but in the preataxic stage of tabes, and even later, the knee-jerk may be present or even exaggerated. We may well suspect that the lateral columns are partially involved when exaggeration occurs. In some cases the knee-jerk has returned after being lost when hemiplegia has developed, and of this I have seen one or two examples.

C. Achard and Léopold-Lévi² report a case of tabes, with marked symptoms, lasting ten years, and with perfect preservation of the patellar reflexes (neither diminution nor exaggeration) until death. They explain this by the preservation of the root entrance zones of Westphal. In the pictures they present, however, these zones certainly appear considerably degenerated.

The investigations of Dejerine some years ago demonstrated the occurrence of peripheral neuritis in tabes, and recently Gumpertz³ has examined the nerves in pieces of skin excised from anæsthetic areas in eight living persons afflicted with tabes. He found degeneration in three cases, which, of course, does not mean that in the other five cases the nerve-endings in portions of skin not examined by him were normal. In those cases in which he found alterations of the nerves of the skin, all causes of neuritis except tabes could be excluded. I am one of those who believe that the symptoms of tabes are probably in part due to peripheral neuritis, but I am not prepared to follow Leyden in accepting neuritis as the origin of the disease, although this view has some evidence in its favor.

Tabes is usually a disease of slow development. Senator⁴ reports a case in which it had an unusually rapid course. A paralytic stage was reached within sixteen months from the manifestation of the first symptoms. The man had the rare malformation of the foot known as *pieu tabétique*, which is said to occur in one case of tabes out 1250. Senator reports another case of tabes with Dupuytren's contracture. The case is reported by too careful an observer to be disregarded, but it is well to bear in mind that such a rapid development of tabetic symptoms is usually an indication of the peripheral pseudo-tabes of Dejerine or of spinal syphilis. I have recently had a patient who presented lost knee-jerks, extreme ataxia, and other signs of tabes, and died about seven months after the beginning of the symptoms. The lower limb became almost completely paralyzed. The case was probably one of syphilis.

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xiv., Nos. 3 and 4.

² Nouvelle Iconographie de la Salpêtrière, ii., 1898.

³ Zeitschrift für klin. Med., Band xxxv., Heft 1 and 2.

⁴ Berlin. klin. Wochenschrift, 1898, No. 29.

Unilateral ptosis is not a very rare sign of tabes, but bilateral ptosis is more uncommon. I have recently had two colored tabetic patients, not full-blooded negroes, with the bilateral form.

Krauss¹ believes he has found a new kind of crises in tabes which he calls hepatic crises; but the possibility of the presence of bilestones has not been entirely eliminated.

The *Journal of the American Medical Association*, April 15, 1899, calls attention to the fact that H. Gifford, of Omaha, described in 1895 the contraction of the pupils on forcible closure of the lids, recently mentioned by Westphal.² The sign described by the latter is as follows: When the pupil does not react to light or reacts very imperfectly, and is not narrowed, voluntary attempts to contract energetically the orbicularis oculi cause contraction of the pupil. When the eyelids are held open and attempts are made by the patient to close them, the narrowing of the pupil may be seen as the eyeball rolls upward. This phenomenon could be demonstrated in most cases of reflex iridoplegia. Occasionally it may be noticed in pupils not rigid to light. Westphal regards it as an associated movement.

Piltz³ has found that the mere thought of a bright light is sufficient to cause contraction of the pupils, and the thought of a dark object to cause dilatation.

Leszynsky⁴ finds that unilateral reflex iridoplegia may occur in tabes, general paralysis, cerebral syphilis, or as a remote result of disease of the third nerve or its nucleus. It indicates degeneration of the oculomotor nucleus or its efferent branches, and is usually of syphilitic origin.

The lesion producing unilateral reflex iridoplegia is situated in the centrifugal portion of the reflex mechanism. Reber⁵ has reported two more cases of unilateral Argyll-Robertson pupil.

The variation in the action of the pupil to light is occasionally seen in tabes, but is rare. Eichhorst has recently reported two such cases. Treupel⁶ describes a case of tabes in which reaction of the pupil to light was observed in 1896, rigidity of the pupil in 1897, and reaction again in 1898. Dr. D. J. McCarthy informs me that he observed this intermittent pupillary rigidity in one of his patients.

The atrophy of the optic nerve is one of the most important signs of tabes, and the paper by Silex⁷ on this subject is of much importance. He says that the atrophy of the optic nerve in tabes may be arrested for

¹ *Journal of Nervous and Mental Disease*, 1899.

² *Neurologisches Centralblatt*, 1899, No. 4.

³ *Ibid.*, No. 1, p. 14.

⁴ *The New York Medical Journal*, July 30, and August 6, 1898.

⁵ *Journal of Nervous and Mental Disease*, May, 1899.

⁶ *Münch. med. Wochenschrift*, August 30, 1898, No. 35.

⁷ *Berlin klin. Wochenschrift*, 1898, No. 39, p. 583.

many years, and that usually one nerve is more affected than the other. He believes that about 15 per cent. of tabetic persons have optic-nerve atrophy. He was able to obtain evidence of syphilis in forty-four out of fifty-four cases of tabetic optic-nerve atrophy. He found that the shortest period after syphilitic infection in which the optic atrophy developed was eight years, and the longest thirty years. The mercurial treatment may be of great service if the disease of the optic nerve is truly syphilitic, but it never arrests, and in many cases increases, the optic atrophy. The same may be said of iodide of potassium as far as the optic nerve is concerned. His words are most discouraging, but undoubtedly true—viz., we are utterly powerless to prevent the tabetic optic-nerve atrophy. I have been surprised by the number of cases of amaurotic tabes seen in my clinic—cases in which the optic atrophy is an early sign and the other symptoms of tabes are not numerous or very pronounced. When tabes occurs in the negro the amaurotic form seems to be relatively common.

Schaffer¹ believes that tabes is a disease primarily in the posterior roots, and that the degeneration of the posterior columns is secondary to this disease of the roots. The degeneration of the posterior columns conforms to the embryonal systems of Flechsig and Trepinsky. The posterior root may be exposed *in toto* to the injurious substance, but only certain fibres in the root degenerate, and in this way the foetal arrangement of the posterior columns is exhibited in tabes. The degeneration of the posterior roots, therefore, is systemic. The infiltration and vascular lesions of the posterior roots play an important rôle in tabes, but the degeneration of the posterior roots may be primary. Tabes does not begin in the cells of the spinal ganglia. In this way Schaffer attempts to reconcile certain conflicting views.

Knee-jerk in Brain Tumor. It is now well known that the knee-jerk may be absent in brain tumor, and in a number of cases of brain tumor the posterior roots have been found degenerated. The cause of this degeneration is a matter of dispute. The lost knee-jerk may, in certain cases, lead to a mistaken diagnosis of tabes.

Kirehgässer² refers to the literature on the changes in the spinal cord resulting from cerebral tumor. He describes two cases, one of brain tumor (spindle-cell sarcoma) and one of carcinoma of the stomach. The posterior roots in the first case were most altered in the cervical swelling and upper thoracic region, and least in the lower thoracic region. In the lumbar region the accumulation of black dots again became perceptible, but not as much so as in the upper regions of the cord. The alteration was confined to the intramedullary part of the roots, except in the

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xiii., Nos. 3 and 4.

² Ibid., Band xiii., Heft 1 and 2.

lowest portion of the lumbar region. The anterior roots were affected only in the lumbar region. In the case of gastric carcinoma the changes in the posterior roots throughout the cord and of the anterior roots in the lumbar region were similar to those in the first case. Kirchgässer shares the opinion of those who believe that the changes in the spinal cord found in cases of brain tumor are chiefly due to increase of pressure in the cerebro-spinal cavity. In both his cases malignant tumors existed. The patient with brain tumor died without a trace of cachexia immediately after an operation for the removal of the tumor, while the very cachectic patient with carcinoma of the stomach died from exhaustion. The changes were greatest in the case without cachexia. Kirchgässer himself seems to be somewhat in doubt as to whether the accumulation of black dots in the posterior roots, which he observed by the Marchi method, should be regarded as indisputably pathological, and I confess that a similar doubt has existed in my mind when I have found scattered black dots by Marchi's method in the posterior roots.

Ptosis. Bunting¹ believes that a centre for the elevator of the upper eyelid is situated in the posterior extremity of the second frontal convolution, and extends probably into the first frontal convolution. This centre is distinct from that for other eye muscles, and ptosis may occur in the form of a solitary paralysis as a result of cortical lesion. The blood-supply of this area is double, and is from the anterior cerebral and middle cerebral arteries. Further observation is necessary before we can accept this centre without reservation.

Hereditary ptosis is very rare, and the following is an extraordinary report: A woman while in great danger of drowning closed her eyes forcibly. When she was rescued she was found to have bilateral ptosis, and this persisted during her lifetime. She was pregnant at the time of the accident, and her child was born with bilateral ptosis. This child, a daughter, had two normal children and a son with bilateral ptosis, and this son had a child with bilateral ptosis. The writer² refers to Darwin, who taught that acquired somatic peculiarities may occasionally be transmitted.

Friedreich's Ataxia. Necropsies in Friedreich's ataxia are not numerous. The disease may be mistaken for tabes, although it has its characteristic symptoms. Mackay³ describes the pathological condition in a case in which he found complete sclerosis of Goll's columns from the sacral to the upper cervical region most pronounced in the upper thoracic region; sclerosis of Burdach's columns above the upper thoracic region less marked in the portion adjoining the gray matter; sclerosis of Lissauer's zones; sclerosis of the crossed pyramidal tracts from the

¹ *Lancet*, August 20, 1898.
Brain, vol. xxi., 1898.

² *Deutsche med. Wochenschrift*, 1899, No. 10.

lumbar region upward less distinct above the mid-thoracic region; sclerosis of the direct pyramidal tracts, of the direct cerebellar tracts, of the posterior horns, of the posterior roots, and of Clarke's columns. The peripheral nerves also were degenerated. The fillet was normal, and a slight discoloration of the pyramids was not seen above the olives. The degeneration in this case was quite typical of Friedreich's ataxia.

Three cases of Friedreich's ataxia occurring in one family and an isolated case are described by Whyte.¹ He discusses the symptoms, diagnosis, pathology, and treatment of the disease.

Syringomyelia. Hahn² has studied the disturbance of sensation in six cases of syringomyelia, and in all six the disturbance of all qualities, even tactile sense when it was involved, was "segmental" (*parallel* to the long axis of the limb) or nearly so. The anæsthetic areas of the different qualities usually had the same limits, although sometimes the thermo-anæsthetic was the largest. In some cases the disturbance was greater toward the periphery of the extremities, but was always in the "segmental" and not the "central" type; in other cases it was less toward the periphery. By "central" type is meant complete hemianæsthesia or anæsthesia in the form of a glove, stocking, etc. By "segmental" is meant disturbance of sensation on the trunk and neck in vest-form; but in the limbs, involving the whole limb, or in bands parallel to the long axis of the limb. The use of the word "segmental" in this sense is confusing, for it has frequently been employed in the manner in which it is now proposed to use "central." Why should we not say spinal type and cerebral type? All authors have not accepted Zachr's views regarding the occurrence of the "segmental" type in syringomyelia, and many believe the "central" type may be found.

A case of syringomyelia in which, after a slight trauma, the right upper limb and the adjoining part of the thorax were greatly swollen, was observed by Gnesda.³ The œdema was regarded as spinal in origin. Schlesinger said he had only seen this œdema in one other case.

Another rare symptom is reported by Egger,⁴ who observed a case of syringomyelia with paralysis of the vocal cord, thorax, and diaphragm on the left side. This patient had previously been studied by Dejerine and Mirallié on account of other unusual symptoms.

Slight anomalies in the formation of the central canal of the spinal cord may be of considerable importance, and hydromyelia may cause disturbance of function, according to Pick.⁵ He reports a number of

¹ Brain, part lxxxi., Spring, 1898.

² Jahrbücher für Psychiatrie und Neurologie, Band xvii., Heft 1 and 2.

³ Wiener klin. Wochenschrift, 1899, No. 4.

⁴ Comp. rend. de la Soc. de Biol., 1898.

⁵ Archiv für Psychiatrie, Band xxxi., Heft 3.

cases of enlargement of the central canal and of cavity formation, in which, by means of numerous sections, he was able to study the shapes of these various cavities.

Argutinsky¹ has shown that the enlargement of the central canal in the *conus medullaris* is not due to a persisting embryonal central canal, but to proliferation of the walls of the canal in this portion of the cord. He thinks this process resembles very closely that seen in syringomyelia. In both we have cavity-formation from proliferation of the ependyma of the central canal; in both masses of cells form about the cavities; in both the enlargement is toward the posterior side of the cord. This finding of a process in the extreme end of normal cords, resembling closely that of syringomyelia, is certainly of much interest, and it may offer an explanation for *one* form of cavity-formation.

Cavity in the spinal cord may exist without causing very marked symptoms, or the symptoms may be so masked by those of some other condition that the diagnosis of syringomyelia may be extremely difficult. A case of the latter type has been reported by Bullard and Thomas;² in this the symptoms of chronic hydrocephalus were more important for some time than those of the syringomyelia.

I have held for some years—as others also have done—that cavity-formation in the spinal cord may be brought about in a variety of ways.

Wullenweber³ reports a case of syphilitic cerebro-spinal meningitis with cavity-formation within the cord from vascular disease. Endarteritis and compression of the vessels by the thickened membranes caused anæmia and necrosis of the central part of the spinal cord. Wullenweber has found four cases of softening and cavity-formation within the spinal cord in syphilitic meningitis in the literature of the last twenty years. Cavity-formation cannot be considered a common condition in syphilitic meningitis, but its occurrence in this disease, in connection with other facts, shows that syringomyelia is not always a congenital condition, as some would have us believe.

Leprosy sometimes very closely resembles syringomyelia clinically. Microscopical examinations in *lepra* anæsthesia have not been numerous. In a case reported by Samgin,⁴ *lepra* bacilli were found in the skin and nerves, but not in the spinal cord, posterior ganglia, or cerebral cortex. Interstitial neuritis existed in the ulnar and peroneal nerves. Secondary degeneration of the posterior roots and of the columns of Goll was found, and degenerated fibres were present in the posterior ganglia. Samgin believes the process began in the peripheral ends of the nerves of the skin.

¹ *Archiv für Mikroskopische Anatomie und Entwicklungsgeschichte*, vol. lii., No. 3.

² *American Journal of the Medical Sciences*, March, 1899.

³ *Münch. med. Wochenschrift*, August 9, 1898.

⁴ *Deutsche med. Wochenschrift*, xxx., 1898.

Jeanselma and Marie¹ have examined the spinal cord in two cases of leprosy, and have found the posterior columns much degenerated, but in a different manner from that seen in tabes. They believe that this degeneration of the posterior columns in their cases of leprosy was probably in the endogenous fibres.

Disturbance of Sensation in Cord Lesions. Patrick² gives further examples of disturbance of sensation in cord lesions, but no one has as yet explained to us satisfactorily why sensation is affected in the peculiar areas observed in syringomyelia and tabes.

Minor³ states that previous to the appearance of the paper by Marinresco he (Minor) had shown that in cases of transverse myelitis a zone, sometimes quite wide, of syringomyelic dissociation of sensation (preservation of touch-sense, loss of pain and temperature-sense) may be found immediately above the anæsthetic regions.

Landry's Paralysis. No disease presents a more striking clinical picture than Landry's paralysis. The cases are not very common. One is reported by Goebel,⁴ in which there were paresis of the external and internal ocular muscles, facial diplegia, paralysis of the muscles of mastication, paresis of the lingual muscles, etc. Many of the muscles examined were found degenerated. The peripheral nerves and spinal cord were normal, but evidences of degeneration were observed in the cauda equina, medulla oblongata, pons, and cerebral peduncles.

Two cases of this disease have been very carefully studied by Thomas.⁵ In the first he found acute inflammatory exudation in the anterior horns of the gray matter, with degeneration of the nerve cells; infiltration of perivascular lymph-spaces; dilatation of the vessels of the anterior horns; moderate infiltration about the vessels of the posterior horns and of the white matter of the cord; slight degeneration of the nerve fibres of the white matter of the cord; slight degeneration of the posterior nerve roots and marked degeneration of the anterior roots; degeneration and perivascular infiltration of the peripheral nerves.

In the second case he found degeneration of the peripheral nerves and degenerative changes in the motor cells of the cord. In neither case were micro-organisms found.

In these two cases two very different pathological forms of Landry's paralysis are given. An excellent review of the literature is presented.

A very interesting case is also reported by Greene, Wilson, and Rothrock.⁶ The microscopical findings were those of anterior poliomyelitis,

¹ *Revue Neurologique*, November 15, 1898.

² *Journal of Nervous and Mental Disease*, 1898.

³ *Neurologisches Centralblatt*, June 15, 1898.

⁴ *Münch. med. Wochenschrift*, Nos. 30, 31, 32.

⁵ *American Journal of the Medical Sciences*, vol. cxvi.

⁶ *Philadelphia Medical Journal*, December 3, 1898.

and the lesions extended into the medulla oblongata and pons. The cause was believed to be auto-intoxication of intestinal origin. Life was prolonged for forty-one days by artificial respiration. Greene recommends the use of artificial respiration, of oxygen, of injection of saline solution into the circulation after removal of blood by phlebotomy, of calomel, and of large enemas.

The micro-organisms which produce the signs of Landry's paralysis are not always the same in every case, and the lesions, therefore, are dissimilar.

Mills and Spiller¹ reported a case of this disease resulting from neuritis and changes in the motor spinal cells, and discussed many questions relating to the malady.

Disseminated Sclerosis. Muscular atrophy is uncommon in the early stage of multiple sclerosis, though it has been described as a later sign coexisting with other indications of the disease. The atrophy, when it occurs, involves especially the small muscles of the hand or of the peroneal region. Brauer² reports a case which is especially interesting, on account of the difficulty of diagnosis. The disease at first presented the appearance of progressive muscular atrophy, and later of amyotrophic lateral sclerosis. Intention tremor, nystagmus, and disturbance of speech were not noticed. The disease began in atrophy of the small muscles of the hand, and later spastic paresis of the legs was observed. At the necropsy disseminated foci of sclerosis were found in the central nervous system.

Sachs³ excellent digest on multiple sclerosis is well worthy of careful reading, but is of such a character that it can only receive brief mention here. It is itself a critical digest.

Charcot spoke of the preservation of the axis cylinders in the sclerotic areas of disseminated sclerosis, but Erben⁴ reports the finding of numerous fine fibres within the sclerotic areas which he is inclined to regard as newly-formed nerve fibres. I am not able to see how the correctness of this interpretation can be established. Erben explains by this new formation of nerve fibres restoration of impaired function, which is frequently seen in multiple sclerosis. The intention tremor, he believes, is due to the destruction of a certain number of nerve fibres and the imperfection of innervation thereby produced. It has been thought by some that the intention tremor is due to destruction of medullary sheaths and the dissemination thereby of the nerve current.

Sander⁵ reports a case of multiple sclerosis in which he found numer-

¹ *Journal of Nervous and Mental Disease*, June, 1898.

² *Neurologisches Centralblatt*, July 15, 1898.

³ *Journal of Nervous and Mental Disease*, 1898, pp. 314, 464.

⁴ *Neurologisches Centralblatt*, July 15, 1898.

⁵ *Monatsch. f. Psychiatrie u. Neurologie*, vol. iv., No. 6.

ous foci of sclerosis scattered over the entire central nervous system. No indications of inflammation could be seen in the vessels within the foci. He believes that the process began in the parenchyma and primarily in the medullary sheaths. The disease does not seem, therefore, according to him, to be a disseminated myelitis. In one case of multiple sclerosis, however, I found conditions very suggestive of an inflammatory origin.

Amyotrophic Lateral Sclerosis. A typical case of amyotrophic lateral sclerosis has been examined microscopically and reported by Pilez.¹ He found pathological changes in the muscles, especially in those of the shoulders and upper extremities, in the peripheral nerves, in the pyramidal tracts extending as high as the cerebral peduncles, in the antero-lateral columns of the cord, in the anterior roots, in the motor spinal cells, in the nuclei of the tenth and twelfth nerves, etc. He gives a brief but excellent review of many interesting details observed by others in different cases of this disease, and quotes a very extensive literature.

Pilez's study does not alter our conception of amyotrophic lateral sclerosis, which seems to be the only disease which may attack the entire motor system. On this account I believed I could employ the degeneration of the cerebrum to determine the extent of the motor cortex in man; and in a case of amyotrophic lateral sclerosis (studied with this end in view, and soon to be published), I was able to define a motor cortical area corresponding quite closely with that given by v. Monakow and determined by other means.

Sarbó² reports a case of amyotrophic lateral sclerosis in which he found granular cells in the cortex, degeneration of the tangential fibres of the cortex, degeneration of the lateral columns extending transversely beyond the area of the pyramidal tracts, degeneration of the cells of the anterior horns and of Goll's column of one side.

A case of amyotrophic lateral sclerosis, with necropsy, was described by Derom and Spiller,³ and a number of anatomical questions were discussed.

Spondylose Rhizomyélique. A peculiar disease described by Strümpell, v. Bechterew, Marie, and others is attracting considerable attention. The name given to it by Marie is "spondylose rhizomyélique." We are in some doubt as to whether all the cases reported are instances of the same malady; as an example of the affection I quote a case described by Mutterer.⁴ The malady in this patient commenced with pain in the

¹ *Jahrbücher für Psychiatrie und Neurologie*, vol. xvii., No. 3.

² *Deutsche Zeitschrift f. Nervenheilkunde*, vol. xiii., Nos. 3 and 4.

³ *Journal of Nervous and Mental Disease*, 1899.

⁴ *Deutsche Zeitschrift f. Nervenheilkunde*, Band xiv., Heft 1 and 2.

lower part of the back, and after about four years the spinal column began to be rigid and locomotion became difficult. The rigidity of the spine extended gradually upward, and the spine became immovable. Kyphosis of the cervical and upper thoracic region developed, and the normal lumbar lordosis was lost. The muscles of the back were atrophied, the movements of the shoulder joints were much impaired, while those of the elbows, hands, and fingers were normal. Both hip joints were completely ankylosed, and the gluteal muscles were much atrophied. The movements of the knees were restricted. The feet and toes were moved normally. The pathology of the affection is not well understood.

Another case with rigidity of the entire spinal column has been reported by Saenger.¹ He disputes the statement of v. Bechterew, who regards this ankylosis of the spinal vertebrae as a special form of disease, and prefers to speak of it, with Oppenheim, as arthritis deformans.

Feindel and Froussard² also describe in detail a case of this rare affection, and give numerous photographs of the patient.

Spinal Tumors. Bruns is justly considered an authority on tumors of the nervous system, and the following case reported by him is interesting in several ways.³ He describes an unusual case of carcinoma of the spinal meninges following a carcinoma of the breast. The metastatic growth was found on the inner layers of the dura on the left side and at the lower part of the cervical swelling. The vertebrae, the extradural space, the pia, and the spinal cord were not involved. The eighth cervical and first thoracic roots on the left side were totally degenerated and the seventh root partially so. This seems to be the only case on record of an isolated metastatic carcinoma with such a location. The left-sided myosis observed in the beginning of the disease, the pain in the ulnar side of the left arm and hand, the weakness and atrophy of the small muscles of the hand, indicated involvement of the first thoracic root; the weakness and, finally, paralysis of the long flexors and extensors of the fingers indicated involvement of the eighth cervical root, and the paresis of the extensors of the hand indicated involvement of the seventh cervical root. The herpetic vesicles on the ulnar side of the flexor aspect of the left hand and forearm were in the portions of the skin innervated by the eighth cervical and first thoracic roots.

It seems to be true that every part of the skin is supplied by three posterior spinal roots (Sherrington), possibly by five (Bruns), and it is true, also, according to Bruns, that every muscle is supplied by a number of anterior roots, and that muscular atrophy does not occur until more

¹ Münch. med. Wochenschrift, November 22, 1898, No. 47.

² Nouvelle Iconographie de la Salpêtrière, 1898, vol. xi.

³ Archiv für Psychiatrie, vol. xxxi., Nos. 1 and 2.

than one anterior root is diseased. Bruns believes that the second thoracic root does not innervate the small muscles of the hand. In operations on the vertebrae one or two roots may be cut without causing very evident anesthesia. This is an important fact.

In making a diagnosis of vertebral carcinoma the history of a previous carcinoma elsewhere is most important, but caries of the vertebrae may develop in persons who have not had carcinoma, or the symptoms may be due to myelitis from cachexia (Oppenheim). Recovery from the vertebral or spinal disease, the presence of a sinking abscess, tuberculous manifestations elsewhere, and youthful age of the patient are in favor of vertebral caries, but all other signs are of doubtful differential value. Very extensive involvement of the vertebrae by carcinoma may produce comparatively few symptoms. Sudden paraplegia may occur without previous distinct symptoms of carcinoma, and may be due to a giving way of the vertebrae and compression of the cord. Symptoms of involvement of the vertebrae, spinal roots and cord are not present in every case of vertebral carcinoma, and the diagnosis may not be easy if only one group of symptoms is present. Bruns is inclined to believe that carcinoma of the vertebrae is always secondary.

Eskridge and Freeman¹ report an interesting case of tumor of the spinal cord, diagnosed during life and operated upon with recovery of function in the paralyzed lower limbs. The symptoms on which Eskridge especially depended were the existence of unilateral nerve-root symptoms for a year, the presence of nerve-root symptoms for six months before the appearance of cord-symptoms, the development of bilateral cord-symptoms two weeks after the parents and the boy first noticed any trouble that indicated a lesion in the cord, and the absence before absolute paralysis set in of the usual symptoms of a unilateral cord lesion, such as motor paralysis on one side of the body and anesthesia on the opposite, and this, notwithstanding the fact that unilateral nerve-root symptoms had been evident for a year. The authors of this paper are to be congratulated on the success of the operation, for surgical intervention is a very serious undertaking in diseases of the spinal column, and often proves fatal, as in a case of tumor of the spinal cord reported by Quensel.²

The disturbance of sensation in Quensel's case seemed to indicate that a compression of the spinal cord extended upward as high as the seventh posterior thoracic roots. Although the nature of the compression could not be determined, it was thought best to operate. A sarcoma was found upon the dura, involving the seventh and eighth thoracic roots. The wound became infected, and the patient died six days after the

¹ Philadelphia Medical Journal, December 10, 1898.
² Neurolog. Centralbl., June 1, 1898, No. 11.

operation. Some interesting facts in regard to Gowers' column are given.

A peculiar variety of spinal tumor is described by Fraenkel.¹ He reports two cases of tumor of the spinal membranes which showed, as is not seldom the case, only slight tendency to involve the spinal cord. In one of these tumors, at the portion where the neoplasm was within the cord-substance, numerous canals and spaces were found lined with a single layer of cylindrical cells, resembling the epithelium of the central canal. These cells were believed to have been separated from those about the central canal and to have given origin to the tumor. Where these spaces existed the tumor was a neuro-epithelioma (Rosenthal), or, to employ the term used by Benda, which is to be preferred, an ependymoma. Elsewhere this tumor, as well as the other, was said to be a gliosarcoma, but the existence of gliosarcoma within the central nervous system is disputed.

Hæmatomyelia and Myelitis. Bailey² discusses hæmatomyelia quite at length, and reports a case, with necropsy, which is of special interest. In addition to motor disturbance, thermo-anæsthesia existed below the nipples on the trunk and on the legs and inner sides of the arms. Later the thermo-anæsthesia disappeared from the legs. Tactile and pain sensibility were everywhere normal. The central portion of the spinal cord was almost totally destroyed in the eighth cervical and first thoracic segments and partially so in the seventh cervical. The destruction had encroached considerably on the white matter, and yet tactile and pain sensibility were everywhere normal. Our knowledge of the sensory tracts of the cord has not been advanced by a study of pathological conditions to the same degree as that of the motor tracts. It is hard to understand the preservation of pain sense in Bailey's case unless we assume that both tactile and pain sense are located in the posterior columns, an assumption which is not warranted.

Strümpell³ says he has never been able to examine specimens from a case of true chronic transverse myelitis. The paraplegia, which clinically is diagnosticated as a manifestation of chronic transverse myelitis, usually proves to be due to something else. In many so-called cases of chronic myelitis careful inquiry will elicit the history of an acute beginning of the paraplegia, and such a case is not one of true chronic myelitis. No diagnosis is more carelessly made than that of myelitis, and Strümpell is not the only one who disputes the existence of the chronic form of this disease.

Strümpell, according to Fürstner, has said that cases of primary trans-

¹ Deutsche med. Wochenschrift, xxviii., xxix., and xxx.

² Medical Record, November 19, 1898.

³ Berlin. klin. Wochenschrift, July 25, 1898.

verse myelitis are rare. It would seem, however, from the report of Strümpell's paper, that he referred to *chronic* transverse myelitis and not to the acute form which later becomes chronic, when he spoke of the rarity of the disease. Fürstner¹ reports a case in which he found foci of degeneration within the spinal cord; a vessel was found at the centre of many of these foci. Accumulations of round cells, however, were not seen.

Meningomyelitis. A case of chronic meningomyelitis, in which the diagnosis was most difficult, is recorded by Henneberg.² He describes isolated degeneration of posterior lumbar roots, which is of very rare occurrence. Ankle clonus with lost knee-jerk was observed in this case, and the condition was explained by the degeneration of the crossed pyramidal tract and of the lumbar roots referred to. The only probable cause of the meningomyelitis was trauma. This case also showed that exaggerated reflexes may exist with lost muscular tonicity.

Two cases of syphilitic meningomyelitis reported by Weber³ showed different degrees of vascular involvement. In one the vascular changes were very evident, in the other they were much less distinct. The microscopic examination was made by Risien Russell.

An excellent critical digest on nervous syphilis has been written by Mickle.⁴

Poliomyelitis. Many attempts have been made to separate chronic poliomyelitis from simple progressive spinal atrophy, but they have never been very successful. Degeneration of the cells of the anterior horns of the cord is the essential lesion in each disease, and to separate this degeneration into two distinct forms must always appear more or less artificial. I am not willing, however, to side with those who make no distinction between chronic poliomyelitis and amyotrophic lateral sclerosis. These two diseases are closely related, and possibly when the cells of the anterior horn have been affected many years the cortico-spinal motor tracts may show degeneration; but it is certain that the peripheral motor neurons may be diseased for a long period without involvement of the central motor neurons.

Bielschowsky⁵ reports a case of chronic anterior poliomyelitis beginning at the unusual age of nine years, and after eight or nine years the degeneration of the cortico-spinal motor tracts was insignificant by the Marchi method, and could not be noticed by other methods. Bielschowsky's paper is carefully written, and adds one more case of chronic anterior poliomyelitis, microscopically studied, to the few in literature.

¹ Neurologisches Centralblatt, Feb. 15, 1899.

² Archives für Psychiatrie, vol. xxxix, No. 1.

³ Brain, vol. xxi., 1898.

⁴ Continued in Autumn number of Brain, 1898.

⁵ Zeitschrift f. klin. Med., vol. xxxviii., Nos. 1 and 2.

Cases have occasionally been observed in which a poliomyelitis has been the cause of paralysis in one or more limbs, and after many years the same process, or a similar one, has involved the nerve centres of other extremities. Several theories have been advanced in explanation of this condition, for it has been impossible to get rid of the idea that the early disease was in some way the cause of the later. Dejerine once stated to me that when certain muscles of a limb had been atrophied for a considerable period the corresponding muscles in the corresponding limb occasionally presented, later, a similar atrophy.

Hirsch¹ has given us the first report of a necropsy in a case of late atrophy following early poliomyelitis. He did not find a systemic disease, but quite an extensive myelitis, probably of vascular origin, which evidently began in the seat of the old poliomyelitis. These findings are exceedingly important, and show that an inflammatory process in the spinal cord, even after many years, may spread quite extensively, but the reason of this spreading is unknown. There can be no doubt that in many, probably in most, cases of anterior poliomyelitis the disease does not show this tendency to progress after many years.

It seems to me possible that in some cases where the vitality of the spinal tissues is not very great, or where excessive demand on the functions of these tissues has been made, a time may come when decay is more rapid than regeneration, and death of nerve fibres not necessarily in systemic tracts may be the cause of neuroglia proliferation—a theory such as that advanced by Edinger. It would not be surprising in a case of this kind to find that the original focus of sclerotic tissue, the place where the vitality of nerve structures is less than elsewhere in the central nervous system, should be the region in which the later process began. It is not impossible that the vitality of the spinal cord may be impaired by early poliomyelitis.

There seems to be little doubt that acute anterior poliomyelitis is an infectious disease. I believe it is due to different forms of micro-organisms, inasmuch as it is seen following different infectious diseases.

Packard² has observed two cases occurring in children, and we are indebted to him for a careful review of the literature on the endemic and epidemic appearance of the malady.

The investigations of Schultze³ would seem to indicate that there is a relation between acute anterior poliomyelitis and cerebro-spinal meningitis. He observed a case of acute anterior poliomyelitis occurring in a child, in whom he found, by lumbar puncture, increased pressure of the cerebro-spinal fluid and the presence of the Weichselbaum-Jaeger diplo-

¹ *Journal of Nervous and Mental Disease*, May, 1899.

² *Ibid.*, 1899.

³ *Münch. med. Wochenschrift*, September 20, 1898.

coccus. He believed that acute anterior poliomyelitis and localized meningitis existed in the same case. Such a combination is not rare, as has been shown clinically and microscopically, but this is the first case of acute anterior poliomyelitis in which the Weichselbaum-Jaeger diplococcus has been found. Schultze regards this as the most common micro-organism in the epidemic and sporadic forms of cerebro-spinal meningitis. The rapid disappearance of many of the symptoms in acute anterior poliomyelitis may be due to the fact that this micro-organism may perish comparatively soon. The frequent appearance of this disease in childhood and youth and its epidemic character may possibly be due to the presence of this microbe. The paper is one of much importance.

The opportunity to study the spinal cord in the acute stage of anterior poliomyelitis has rarely been granted, but Matthes¹ has been able to study by the method of Nissl the spinal cord from a child who died eight days after the beginning of anterior poliomyelitis. He found circumscribed hemorrhagic myelitis, with secondary changes in the ganglion cells of the anterior horns, as the cause of the symptoms. All cases of anterior poliomyelitis which have been studied with the microscope soon after the beginning of the affection have shown myelitis, and these findings accord well with the theory of the microbic origin of the disease.

Rothmann² has succeeded in injecting lycopodium powder into the bloodvessels of dogs, and thereby causing paralysis. His experiments were similar to those of Lamy. He found the emboli confined to the distribution of the anterior spinal artery and its branches. There may be an explanation in these statements for the involvement of the same distribution in acute anterior poliomyelitis, for in the latter condition the disease is essentially one of the distribution of the anterior spinal artery.

Attempts to localize motor cortical centres by atrophy of the cortex resulting from the amputation of limbs have not been very successful. A number of investigators have thought they obtained positive findings, permitting conclusions to be drawn in regard to the cortical motor centres, while others acknowledge complete failure in any such attempt.

Probst³ reports a case of infantile spinal paralysis which developed in the first years of childhood, and the man lived sixty-eight years. The cortical motor areas were atrophied. His findings seem to indicate that the central motor neurons do not develop normally when the peripheral ones are destroyed early in life. The existence of atrophy of the central motor neurons following injury of the peripheral motor neurons in *adult* age has not been demonstrated. This case of Probst, according

¹ Deutsche Zeit. f. Nerv.- u. Geist. Krankh., Band xiii. Heft 2 and 3.

² Abstract in Berlin. Klin. Wochenschrift, October 24, 1898.

³ Wiener klin. Wochenschrift, xxx, 1898.

to his statement, is the fourth in which the condition of the brain has been studied in anterior poliomyelitis of childhood.

Muscular Atrophy Developing after Chronic Articular Disease. The cause of this has been very obscure, and the findings within the spinal cord in these cases have thrown little or no light on the nature of this muscular atrophy. Achard and Lévi¹ report a case which enables us to understand better this peculiar form of muscular atrophy. They noticed wasting of the muscles and bones following a chronic affection of the knee, which began when the patient was seven years of age. This early age and the long duration of the affection (thirty-four years) were favorable to the development of spinal lesions, and, in fact, they found a very considerable atrophy of the spinal cord and anterior horn, and a diminution in the number of the ganglion cells in the lumbar and sacral regions on the same side as the atrophied lower limb.

It is well to remember, also, that chronic arthritis occurring early in life, as in this case, may cause arrest in the development of the affected limb, and produce a condition resembling somewhat that of acute anterior poliomyelitis. Ankylosis and exaggerated knee-jerks, however, do not occur in the latter affection, and, on the contrary, flaccid joints are the rule.

The atrophy of the cerebral cortex, which these writers are somewhat inclined to regard as a part of the pathological process, may be viewed with some doubt.

Probst,² as stated above, has discussed this subject very fully in a recent paper, and the evidence in favor of cortical arrest on account of injury to the limbs has by no means been convincing. Nothing is more common than asymmetry of corresponding convolutions in the cerebral hemispheres.

Progressive Spinal Muscular Atrophy. A critical digest of the literature on this subject that has appeared since 1893 has been written by Goebel.³

Erythromelalgia. Mitchell and Spiller⁴ report a case in which the nerves of the great toe were much degenerated, and the vessels of the same part presented marked arterio-sclerosis. Their case is only the second on record in which distinct pathological changes have been found in erythromelalgia; but Sachs, in a paper not yet published, has found lesions very similar to these, although the vessels were more diseased than the nerves.

Family Periodic Paralysis. This is a rare disease in any land, and the clinical report of two cases in a family afflicted with the peculiar form

¹ *Nouvelle Iconographie de la Salpêtrière*, 1898, No. 4.

² *Loc. cit.*

³ *Monats. für Psychiatrie und Neurologie*, vols. iii. and iv.

⁴ *American Journal of the Medical Sciences*, January, 1899.

of paralysis, which occurs at irregular periods without known cause, is made the ground for a monographic treatise by Taylor.¹ A second case has been studied by J. K. Mitchell.²

Pseudo-sclerosis. Spiller³ has reported a case which resembled in some of its features the peculiar symptom-complex described by Westphal and Strümpell, and known as pseudo-sclerosis. The crossed pyramidal tracts were found degenerated throughout the cord. Distinct degenerative changes in the cells of the anterior horns were not noted. The case suggests the possibility of the occurrence of amyotrophic lateral sclerosis in childhood, a possibility which has already been demonstrated by Luce.

Strümpell,⁴ in describing a new case of the disease, says that Spiller's case can hardly be classed under pseudo-sclerosis. It illustrates, however, the difficulty of sharply defining any new disease, and the title of Spiller's paper indicated that the difference between his case and those of Westphal and Strümpell was recognized.

The Stereognostic Sense. Sailer⁵ has made a study of the stereognostic sense—that sense by which we are able to recognize objects when they are placed in the hand and the eyes are closed. It seems to be lost when tactile sense is lost, and is usually disturbed when muscular sense is lost, but may persist if any of the other forms of cutaneous sensation are lost or impaired. The stereognostic sense may be lost as a result of injury to the brain. Valuable as this study is, the author does not pretend that it solves all the problems connected with stereognosis. A case recently reported by Burr, and not yet published, in which tactile sense was lost and stereognostic sense was preserved, is of difficult explanation.

Paralysis Agitans. Karplus⁶ believes that disturbances of sensation (hyperesthesia, hyperalgesia or hypalgesia, spontaneous pain, paresthesia) are not rare in paralysis agitans. These are symptoms of the disease which have received little attention.

Krafft-Ebing⁷ says that paralysis agitans always begins in the upper limbs, unless trauma causes the disease to develop first in the lower, and usually begins in the right upper limb. In fifty out of eighty-eight of his cases the right upper extremity was first involved. The explanation for this mode of development is to be found in overwork of the part. I have recently been able to observe a case in which the disease developed in a limb employed in excessive work, and in another case it devel-

¹ *Journal of Nervous and Mental Disease*, 1898.

² *Brain*, vol. xxi., 1898.

³ *Ibid.*, vol. xxvi., 1899.

⁴ *Deutsche Zeitschrift für Nervenheilkunde*, vol. xiv., Nos. 5 and 6.

⁵ *Journal of Nervous and Mental Disease*, 1899.

⁶ *Wiener klin. Wochenschrift*, 1899, No. 5.

⁷ *Ibid.*, Nos. 2 and 5.

oped in the right upper limb a few months after the man was thrown from his horse and struck the ground with his right shoulder.

Charcot demonstrated that paralysis agitans may result from trauma.

Krafft-Ebing finds that in 110 of his cases of this disease trauma was the cause in 7. Whenever paralysis agitans results from trauma it begins in the injured part, and the commencement in a lower limb indicates a traumatic origin. The non-traumatic form commonly begins in the distal portion of an upper limb. Some unknown causes must act in conjunction with trauma.

Reflexes. Leszynsky¹ has reported a case in which the knee-jerks were lost and ankle clonus and gluteus clonus were present. The lesion was believed to be a hemorrhage into the spinal cord.

A very thorough paper on the reflexes has been written by Mills.² He reports a case of lost knee-jerk, with the presence of ankle clonus, resulting from disease of the muscles and to a less extent of the nerves. He quotes similar cases reported in the literature, and discusses the significance of the deep reflexes in organic and functional disease. I have referred to a case of lost knee-jerk and presence of ankle clonus reported recently by Henneberg.³

It is now well recognized that the patellar reflex may be lost in complete transverse lesions of the cord, but Senator⁴ reports a case in which it was preserved. Paralysis of all four limbs was due to an intramedullary psammoma. The symptoms had lasted about thirteen years. In this case the patellar reflex was preserved, although the transverse lesion high in the cord was complete. This, together with the long duration of the symptoms and the existence of the tumor of the cord-substance, makes the case noteworthy.

v. Monakow⁵ refers to the two cases of Gerhard and Senator, in which the reflexes were retained notwithstanding high transverse division of the cord. One of these was probably the case just mentioned.

Fraenkel⁶ reports a case of psammoma of the spinal cord. The twelfth thoracic segment was completely destroyed and the first lumbar segment was diseased. He reports this case as an instance of lost patellar reflex from a supralumbar lesion. The growth was so near the reflex arc—indeed, in the very area in which Westphal believed this arc to be situated—that we may hesitate a little to accept this case as an evidence of lost patellar reflex from supralumbar lesion.

Brissaud⁷ believes that the law enunciated by Charcot is absolutely

¹ Journal of Nervous and Mental Disease, March, 1899.

² Loc. cit.

³ Loc. cit.

⁴ Zeitschrift für klin. Med., Band xxxv., Heft 1 and 2.

⁵ Monats. f. Psychiatrie und Neurologie, Band ix., Heft 5.

⁶ Deutsche Zeit. f. Nerv., vol. xiii., Nos. 3 and 4.

⁷ Revue Neurologique, August 30, 1898.

correct, and that degeneration of the pyramidal tracts always causes spastic paraplegia. He reports a case of spinal syphilis in which the paralysis, at first spastic, after a time became flaccid. The necropsy showed that although there was a transverse lesion of the cord the flaccidity was due to alteration of the nerves and muscles. One case, however, does not prove that in transverse lesions of the spinal cord the lost patellar reflex is always due to disease of the peripheral neurons.

Six cases were observed by Sano¹ in which the reflexes, especially the patellar, were lost, notwithstanding the integrity of the lumbo-sacral region of the cord. In four of these the lesion was in the cervical region, in two in the upper thoracic.

Pernicious Anæmia and Sundry Pathological Conditions. Three cases are given by Russell² as examples of disease of the spinal cord existing with anæmia. The symptoms resembled those of the affection known as ataxic paraplegia, although the fatal termination was more rapid than in the latter disease. An unquestionable association of profound anæmia with spinal-cord changes existed in the first case, but the anæmia did not conform clinically or pathologically to the rules laid down for the diagnosis of the pernicious variety. In the second case symptoms of spinal-cord affection preceded any evidence of anæmia for nearly two years. This case showed the close relationship between the cases of combined sclerosis occurring in anæmia with those of so-called ataxic paraplegia. The third case demonstrated that cord changes, indistinguishable from those of pernicious anæmia, may occur without any clinical manifestation of anæmia for at least eight months.

The changes in the spinal cord do not depend on anæmia, but both are the result of a common cause in the form of some toxic state of the blood. Anæmia may render the nerve-elements less resistant to a toxic agent. The degeneration of the white columns is not due to changes in the gray matter of the cord, as has been believed by some writers. In most of these cases the degeneration is most pronounced in the cervical and upper thoracic regions, and diminishes in degree and extent toward the cephalic and caudal extremities of the cord. The changes in the nerve-elements do not depend on alteration of the bloodvessels. There is a close relationship between ataxic paraplegia and the more acute forms of postero-lateral degeneration, with or without anæmia, but it would be premature to state that they are identical, although Russell evidently believes that they are.

An excellent paper on combined systemic disease has been written by Dana,³ who reports a case, with necropsy. He states that this affection was first described by J. J. Putnam and later by himself. He thinks

¹ *Journal de Neurologie*, 1898, No. 16.

² *Lancet*, July 2, 1898.

³ *Journal of Nervous and Mental Disease*, 1899.

the disease is more common in women, and that it occurs more frequently between fifty and sixty years, and next to this between forty and fifty years. Syphilis is not a cause, but pernicious anæmia exists in 10 per cent. or more of the cases. Dana believes that the disease is a rapid one, and that death occurs in from one-half to three years in the fatal cases.

Nonne¹ says the spinal changes in fatal anæmia are disseminated myelitic foci, and not the same as those of combined systemic disease, from which they differ greatly. These foci are in connection with the blood-vessels. The toxin is supposed to be carried by the blood, and similar spinal changes are found in some cases of sepsis. In advanced cases the gray matter may be diseased, but this involvement is secondary. Neuropathologists are known to occasionally disagree.

Nonne² has found focal myelitic changes within the spinal cord in six out of eight cases of pernicious anæmia which he examined. He found similar spinal changes in ulcerative endocarditis, sepsis, and senility.

Numerous studies have revealed the changes which occur within the spinal cord in pernicious anæmia, carcinoma, etc., but until now, according to Scagliosi,³ no satisfactory statements have been made regarding the damage wrought in the spinal cord by acute anæmia, such as that produced by hemorrhage. He found chromatolysis in the cells of the brain and cord in a pregnant woman who had been bleeding profusely from the womb, and this he attributed to the diminution in the number of red blood-corpuscles.

Paralysis Caused by Closure of the Abdominal Aorta by Embolus. Heiligenthal⁴ reports one of the rare cases of embolus of the abdominal aorta. The motor and sensory paralysis in the lower limbs was complete, the tendon and skin reflexes in these parts were lost, and severe pain was felt in both lower limbs. The abdominal aorta was found occluded at its bifurcation. Death occurred about twelve hours after the beginning of the symptoms. A focus of anemic softening was found on each side of the central canal of the spinal cord, and these foci could not have been due to the embolus in the abdominal aorta, as the circulation in the lumbar cord was not cut off in this way. The complete motor and sensory paralysis was regarded as the result of peripheral ischaemia. The ischaemic softenings in the cord must have existed more than twelve hours, and they were not in the area of the motor cells. These areas of softening were believed to be due to an embolus in one of the central arteries lying within the anterior fissure. The changes

¹ *Deutsche Zeit. f. Nerv.*, Band xiv., Heft 3 and 4.

Monatsschrift für Psychiatrie und Neurologie, 1898, Band iv., Heft 5.

² *Deutsche med. Wochenschrift*, 1898, xx.

³ *Berliner klin. Wochenschrift*, February 20, 1899.

seen in some of the spinal motor cells were believed to have been the result of loss of function in the peripheral motor neurons.

This case seems to be an evidence that complete loss of function occurs at once when the blood-supply to the peripheral nerves is cut off, and that while the cell body is a very important part of the peripheral motor neuron, the axis cylinder is also a vital portion and incapable of function when its nutrition is interfered with, although still connected with its cell-body.

Changes in the ganglion cells of the sacral and lumbar cord have been found by Rothmann¹ within six hours after the abdominal aorta in dogs was compressed for one hour. After fourteen to sixteen days the cells were almost normal. He, like others, has found that great disturbance of the ganglion cells may exist without serious impairment of function.

The Action of Toxins Upon the Spinal Cord. Mouravieff² has attempted to ascertain the action of the streptococcus and its toxin and of the diphtheria toxin upon the nervous system of guinea-pigs. He finds that the action of these two poisons is very different. The diphtheria toxin attacks the motor cells of the anterior horns of the cord and the peripheral nerves. It affects the peripheral nerve fibres chiefly by causing degenerative changes in the cells from which these fibres arise, and it produces little change in the white matter of the cord. The streptococcus toxin, as shown by the formol-methylene method, does not alter the nerve cells of the anterior horns or the peripheral nerves, but acts on the posterior columns of the spinal cord and on the posterior roots without any primary action on the cells of the spinal ganglia. When the diphtheria and the streptococcus toxins were injected together the characteristic changes of each toxin were observed. These findings are very interesting, and show quite plainly how different poisons have an affinity for distinct systems of fibres. They afford opportunity for theorizing in regard to tabes dorsalis.

Paralysis from Chlorosis. Pineles³ reports a case of chlorosis in which paralysis resulted from sinus thrombosis and softening of the motor cortical areas.

The Spinal Cord in Cases of Lead Poisoning. Microscopical examination is not common, and the case reported by Laslett and Warrington,⁴ in which muscular atrophy, chiefly in the upper limbs, and wrist-drop were noted is interesting. The posterior interosseous nerve was much atrophied; the ulnar nerve was also atrophied, but to a less extent, and the anterior roots of the sixth, seventh, and eighth cervical segments presented still less alteration. The posterior roots and muscle

¹ *Neurologisches Centralblatt*, 1899.

² *Revue Neurologique*, July 15, 1898.

³ *Wien. klin. Wochenschrift*, October 27, 1898.

⁴ *Brain*, part lxxxii., Summer, 1898.

spindles were normal. The extensor muscles of the hands were greatly altered. Cells of the anterior horns of the sixth, seventh, and eighth cervical segments showed eccentric position of the nucleus and chromatolysis. The authors believe that the changes began in the peripheral nerves, and that the cellular changes were secondary to these.

Paralysis in Typhoid Fever. This is occasionally seen. A number of interesting cases of paralysis occurring during the course of typhoid fever, or during convalescence from this disease, were observed by Etienne,¹ but none of these cases was studied histologically. The paralysis may present itself as an ascending subacute anterior poliomyelitis, resembling Landry's paralysis very closely, or it may appear as polyneuritis, or as a combination of the two forms.

The question of cellular changes occurring in fever is a disputed one. Brach² reports characteristic changes in the nerve cells of three persons who died after having fever. He believes that these characteristic cellular changes occur in man when the fever has been continuous during several hours, has lasted until the time of death, and has been 3° C. above the normal. The resisting power of the chromophilic elements in the cells of some persons is greater than in those of others. The cellular changes may not occur in hectic fever, as the elevation of temperature is not of sufficient duration. The cellular changes are dependent on the degree of the elevation of temperature.

On the other hand, in only one out of nine cases in which fever had been present during life could Juliusberger and Meyer³ find important cellular changes, and in this case only in the cerebral cortex. The cause of these changes in this case could not be determined.

Marinesco⁴ finds that the nerve cells of animals and man undergo tumefaction, chromatolysis, etc., under high temperatures. Fever in man is often, or, perhaps, always, the result of infection or intoxication, and the distinction must be made between the cellular changes caused by high temperatures and those caused by intoxication.

Brown-Séquard Paralysis. We do not understand the manner in which the symptom-complex of the Brown-Séquard paralysis is produced, because we do not understand the location of the sensory tracts in the cord. The syndrome is sometimes due to spinal syphilis and sometimes to trauma. Two cases have been reported by Cushing resulting from gunshot wounds, and he speaks of hemorrhage into one side of the lower cervical enlargement as a cause of the symptom-complex. His paper is most carefully written.

Lloyd⁵ reported a case of Brown-Séquard paralysis, with atrophy of

¹ *Revue Neurologique*, February 15, 1899.

² *Berliner klin. Wochenschrift*, October 31, 1898.

³ *Ibid.*, No. 31.

⁴ *Revue Neurologique*, January 15, 1899.

⁵ *Brain*, part lxxxi., Spring, 1898.

the shoulder, arm, and hand muscles, which resulted from an injury of the cervico-thoracic vertebrae. Tactile sensation was preserved except in the right leg below the knee. The cervical vertebrae were found at the necropsy to be much injured, and the spinal cord was flattened antero-posteriorly at the exits of the fifth, sixth, and seventh cervical roots. The left portion of the cord, including a part of the anterior column, all of the lateral column, the anterior and posterior horns, and the ventral part of the posterior columns, was extensively injured at the seventh cervical segment. The lateral column of the right side was not entirely intact. Ascending degeneration was noted in the left Gowers tract, the left direct cerebellar, the left crossed pyramidal tract, and in the ventral part of the posterior columns. Below the compressed area the left crossed pyramidal tract and the posterior columns presented degeneration. The case affords an opportunity for localization of sensation in the spinal cord.

The Functions of the Posterior Columns. This has always been a matter of dispute. Bickel¹ cut away 1 cm. of the posterior columns in the mid-thoracic region of a dog. Ataxia of the posterior limbs was transitory, but disturbance of the senses of cold, touch, and pressure in the posterior limbs was persistent. The ataxia was believed to be due to disturbance of the so-called muscular sense. These observations confirm those of Schiff, and lead to the conclusion that in the dog the posterior columns are concerned in the transmission of the sensations of cold, touch, and pressure, and of the so-called muscular sense.

Nerve Cells and Nissl Method. The neuron doctrine, according to Nissl,² can no longer be accepted. The views of Apáthy and Bethe have not been positively proved to be correct, but they are better founded than the neuron doctrine was. The latter depended entirely on the results obtained by the Golgi stain. Nissl believes that the gray matter is largely composed of a network of true nervous tissue which is in relation with the fibrils of the nerve cells. Nissl does not make the distinction between nerve cells and ganglion cells which Apáthy makes. He thinks the stainable portion of nerve cells varies in composition in different cells. He acknowledges that chronic poisoning does not produce characteristic changes in the nerve cells, although subacute poisoning with maximum doses gives typical changes for each poison. He acknowledges, also, that the chromophilic elements of the nerve cells may be greatly altered without any manifestation of disturbed function. The views of Nissl³ regarding the fallacy of the neuron doctrine have called forth violent opposition, and von Lenbössék and others have written in defence of the theory. We must wait for further results before a satisfactory decision can be reached.

¹ Münch. med. Wochenschrift, September 13, 1898.

² Ibid., Nos. 31, 32 and 33.

³ Centralbl. f. Nerv. und Psych., Beiheft, 1898.

Pick¹ has resorted to an ingenious method to irritate the peripheral motor neurons to action indirectly, and thus avoid, as far as possible, the effects of electricity on the ganglion cells of the cord. He applied the faradic current for from half an hour to an hour to the cerebral cortex in monkeys and cats, and then successively cut segments of the cord until he determined by paralysis the portion containing the centres for the limb thrown into action by the current. He found chromatolysis and shrunken nuclei in the cells which had been functioning, and believed that his observations lend support to the view that the chromatic substance of the nerve cells is a reserve material, and disappears during activity.

Cassier has confirmed the investigations of others in finding alterations of the cells in the spinal ganglia belonging to the sciatic nerve when this nerve was cut. He observed some degeneration of the posterior columns, which he believed to be due to the changes in the cells of the ganglia, and yet the degeneration obtained experimentally by division of a peripheral nerve does not, he thinks, offer an explanation for the tabetic alteration of the cord.

Nerve-cell Changes in Intestinal Disease. These have recently been studied. Müller and Manecatide² have reported on the nerve cells of children who died within a few months after birth from febrile and afebrile intestinal diseases. These affections are associated with toxic phenomena. They found cellular changes in all their seven cases.

Changes in the Central Nervous System from Peripheral Lesions. These are well recognized. v. Monakow³ reports the findings in a case of almost complete flaccid, atrophic paralysis of the right upper limb from an injury of the brachial plexus received when the patient was thirteen years old. The patient died at the age of eighty-three years. The arm centre on the left side of the brain, especially in the posterior central gyrus, was somewhat atrophic, and the upper two cortical layers in this portion were not normal. The left optic thalamus and the left pyramid were somewhat smaller than the right. The right anterior cervical roots from the fourth to the eighth were entirely degenerated. The corresponding posterior roots were degenerated, though here and there bundles of normal fibres were found, and yet sensation of the right arm had not been disturbed. The cells of the right anterior horn, except the medial anterior group and the cells of the middle horn, were much altered in the cervical region. The early age of the patient at the time the injury to the brachial plexus was received was probably the cause of the pronounced changes.

¹ Deutsche med. Wochenschrift, 1898, xxii.

² Zeitschrift für klin. Med., Band xxxvi., Heft 1 and 2.

³ Neurologisches Centralblatt, 1898, No. 21.

Some interesting results have been obtained by Marinesco¹ in experimentation. If a nerve fibre is cut chromatolysis occurs in the cell from which this fibre arises, and the nucleus is displaced. This is known as reaction of the cell-body. Later restoration begins; the cell hypertrophies, the nucleus returns to its original position, and the cell presents pycnomorphia (hyperchromatosis). This hypertrophy of the cell in the hypoglossal nucleus is most noticeable ninety days after the division of the nerve fibre, and after one hundred days the cell assumes a more nearly normal appearance. Some cells, however, disappear after the nerve is cut. The regeneration of the peripheral fibre and the restoration of the cell body are dependent one upon the other. If regeneration of the nerve is prevented by resection of a large portion of the nerve or by tearing out the nerve, the cellular changes are different, reaction of the cell-body is more rapid, and after twenty days apycomorphia and atrophy of the cells are found instead of pycnomorphia and hypertrophy. In the lower part of the hypoglossal nucleus the changes are more marked than in the upper, and in the former the cells mostly disappear after a month has elapsed. Those which remain are faintly colored and atrophied, with the exception of certain cells which are deeply stained and atrophied. Resecting or tearing out the nerve prevents, therefore, restoration of the cells. These results were obtained in animals, but it is equally true that restoration of the cells does not occur in man when their peripheral processes have been cut in the amputation of a limb.

Localization of Centres in the Spinal Cord. Chromatolysis has not been obtained by most investigators when the spinal motor nerves are cut. Marinesco,² by resecting a considerable piece of a nerve or by tearing out a nerve in rabbits and dogs, has been able to produce important changes in the nerve cells. He finds by this means that the nucleus of the musculo-spiral nerve at the seventh cervical segment forms a compact group occupying the external and posterior part of the anterior horn. Toward the eighth cervical segment this group approaches the centre of the horn and becomes more anteriorly situated. The common nucleus of the median and ulnar nerves is situated behind that of the musculo-spiral. At the seventh cervical segment the cells of the median and ulnar nerves are not numerous, but become more so at the eighth cervical, forming the postero-lateral group. They are found also in the upper part of the first thoracic segment.

The position of the median and ulnar nucleus, lower in the spinal cord than that of the musculo-spiral, explains why gliosis, in ascending, causes involvement of the flexor muscles of the hand before the extensors are

¹ *Neurologisches Centralblatt*, October 1, 1898.

² *Revue Neurologique*, July 30, 1898.

paralyzed, and we therefore get the claw-hand. The fact that the nucleus of the median and ulnar nerves is more in line with the central canal than that of the musculo-spiral, where the nuclei occur in the same level, explains also the claw-hand of syringomyelia. These nuclei are not sharply separated from one another. Almost every nerve of the brachial plexus has its origin in more than one segment.

Van Gehuchten and de Buck¹ have shown that the cells for the innervation of the muscles of the leg and foot occupy the posterior part of the anterior horn of the spinal cord, and extend from the upper part of the fifth lumbar segment to about the lower portion of the fourth sacral segment. Two groups of cells for the innervation of this portion of the lower limb exist—one, very large and probably containing subdivisions, extends from the upper part of the fifth lumbar segment to the lower part of the third sacral segment; the other, also quite large, begins behind the first group at the second sacral segment and extends to about the lower part of the fourth sacral segment. These results differ from those obtained by Sano. In another case in which amputation was done at the knee, and death occurred a month later, Van Gehuchten and de Buck were able to make a further study by chromatolysis of the location of the cells, and to fully confirm their previous observation.

They discuss quite fully the significance of vacuolation, and conclude that as yet we do not know sufficient to decide whether these vacuoles are artefacts or pathological changes.

ANATOMY OF THE CORD.

I have avoided questions which relate purely to anatomy, as these hardly come within the scope of this work, but the statements made by Durante are so remarkable that I am tempted to allude to them. If these observations are confirmed our views regarding certain diseases of the spinal cord may need modification.

Durante² describes degeneration of the posterior columns and of the sensory tracts in the pons and medulla oblongata in four cases, which he believes was due to lesions in the cortex or basal ganglia. He traced the degeneration from the mesencephalon into the spinal cord, and observed a decrease in the degree of the degeneration the further from the brain the section was taken. The integrity of the spinal roots, of the gray matter of the cord, and of the columns of Burdach, especially in their external portion, excluded the supposition of a degeneration of the posterior columns secondary to an affection of the spinal ganglia, or

¹ *Revue Neurologique*, August 15, 1898.

² *Ibid.*, June 30, 1898.

to that of the posterior roots, or to that of the gray matter of the cord. The change which Durante observed in the posterior columns was of the character known as retrograde degeneration, or, more correctly speaking, as atrophy. He thus observed atrophy of one sensory neuron consecutive to a lesion of another sensory neuron. He refers, by way of comparison, to the alteration of the peripheral motor neurons after lesions of the central motor neurons, to degeneration of the direct cerebellar tracts resulting from degeneration of the posterior roots, and to degeneration of the lateral columns in persons whose limbs have been amputated, and who have, therefore, suffered injury of their peripheral motor neurons. He quotes some cases in the literature similar to his. Lesions of the occipital lobes especially, and, next to these, lesions of the inferior parietal lobes, are the ones most likely to cause the most intense sclerosis of the columns of Burdach and Goll.

DISEASES OF THE NERVES AND MUSCLES.

Facial Nerve. Remak¹ reports two cases of facial paralysis in which associated movements occurred in the distribution of the lower branch of the seventh nerve when the eyelids were closed.

The occurrence of retrobulbar neuritis and facial palsy in the same person has been observed by de Schweinitz² in two cases. This is an interesting observation, and it seems strange that attention has not been directed to it before.

The origin of the peripheral portion of the upper branch of the seventh nerve has been unknown, and the escape of this branch in bulbar paralysis has caused much perplexity. Mendel thought the centre of the upper branch was in the caudal part of the oculomotor nucleus. Duval placed it in the nucleus of the sixth nerve, and Gowers and Bruce located it in the hypoglossus nucleus.

Van Gehuchten³ has made important studies on the facial nerve. His method of experimenting depends on chromatolysis. This method he has applied to the facial nerve. He finds that in the rabbit the facial nucleus consists of two chief divisions—a ventral and a dorsal. The ventral division contains three distinct groups of cells, and these give origin to the fibres in the lower branch of the seventh nerve. The dorsal group gives origin to the fibres of the upper branch of this nerve. It remains now to be determined whether the ventral and dorsal groups have different vascular supplies.

¹ Berlin. klin. Wochenschrift, December 26, 1898.

² Journal of Nervous and Mental Disease, May, 1899.

³ Journal de Neurologie, xiv. and xv.

Many writers (Van Gehuchten says most writers) now describe the facial nerve as in part sensory and in part motor. Retzius and, more recently, von Lenhossék have shown that the geniculate ganglion is like the cerebro-spinal ganglia, and that the central processes of its cells pass into the nerve of Wrisberg. Van Gehuchten finds by the method of chromatolysis that the facial nerve at its exit from the stylomastoid foramen contains undoubtedly a certain number of sensory fibres which arise in the geniculate ganglion. The nerve of Wrisberg is, therefore, the sensory root of the seventh nerve. Amabilino (cited by Van Gehuchten) has formed a different opinion. He believes that the peripheral processes of the cells of the geniculate ganglion pass into the chorda tympani, and that none of these pass into the peripheral branches of the facial nerve. Van Gehuchten points out that Amabilino found about a fifth of the cells of the geniculate ganglion normal after section of the chorda tympani, and he very pertinently asks where these cells send their processes if not into the peripheral branches of the facial.

Two cases of resection of the trifacial nerve for *tic douloureux* have been reported by J. K. Mitchell.¹ The slight impairment of sensation following the operation seemed to suggest the presence of sensory fibres within the seventh nerve. The seventh nerve is probably not purely motor in function.

Juliusburger and Meyer² report a case of paralysis of the right seventh and eighth nerves dating from the third year of life. The man died when fifty-eight years old. The right seventh nucleus contained few cells, and these few were very imperfect; the intramedullary fibres of the seventh nerve were much atrophied. Complete deafness from acute inflammation of the left ear occurred a few days before death. The cells of the ventral nucleus of the left auditory nerve were cloudy, pale, and in chromatolysis. These changes in the cell body of the central neurons, from lesion of the peripheral neurons, are most interesting and important. They are not in harmony with the recent investigation on the results of division of a sensory nerve. They teach, if this interpretation is correct, that the absolute independence of the neurons probably does not exist. The changes in the seventh nucleus were such as have frequently been observed in motor cells when their peripheral processes are injured. The view that changes occur in the cell bodies of a central sensory neuron, from lesion of a peripheral, was held by Van Gehuchten for a time, but has been relinquished.

The condition of the facial nerve as indicative of thalamic lesions is not always a positive sign. We know little concerning the functions of

¹ *Journal of Nervous and Mental Disease*, June, 1898.

² *Monats. für Psychiatric und Neurologie*, Band ix., Heft 5 and 6.

this important body. Fraenkel¹ has reported a case of tumor in the corpus striatum and thalamus which produced the symptom first observed by Nothnagel. In voluntary movement of the facial muscles on the side opposite to that of the tumor no distinct paralysis of the seventh nerve was seen, but in emotive movements the paralysis was very evident. Peculiar athetoid movements of the arm on the same side as the tumor were present. I have referred to writers who believe that athetoid movements may be due to lesions in the portion of brain diseased in this case.

Two very interesting examples of congenital facial paralysis occurring in brothers are reported by Thomas.²

The liability of the facial nerve to repeated attacks of paralysis has been emphasized by Bernhardt.³ He finds that in 484 cases of facial paralysis reported by different writers 34 were recurrences. He gives a number of interesting details from the cases he has collected in regard to the sex and age of the persons afflicted, the side of the face, etc.

Ophthalmoplegia. The occurrence of external ophthalmoplegia in twin brothers has been observed by Homén.⁴ The cause was supposed to be nuclear. The ptosis was improved in one case by operation.

Two very interesting cases of ophthalmoplegia have been reported within the past year; one recorded by Sachs⁵ seemed to be of a hysterical nature; the other, by Wiener,⁶ was believed to be due to an embolus in one of the branches of the basilar artery.

Paralysis of the Twelfth or Hypoglossal Nerve. Cases of isolated paralysis of the twelfth nerve are exceedingly rare. Dinkler⁷ reports a case of isolated paralysis of the hypoglossus which he believed was due to osteomyelitis or otitis of the occipital bone and petrous portion of the temporal bone. No necropsy was obtained, as the patient recovered from the paralysis.

Another case of right-sided glossoplegia, due to trauma, is reported by Brasch.⁸ He believes that the cause was an injury to the hypoglossal nerve in or close behind the anterior condyloid foramen. A fracture of the skull at this point, or an injury at the articulation of the atlas, was thought to have occurred. The patient had hysteria.

Hoffmann⁹ reports a case of isolated paralysis of the hypoglossus nerve and one of isolated paralysis of the circumflex.

¹ Vereins Beiträge der deutschen med. Wochenschrift, December 1, 1898.

² Journal of Nervous and Mental Disease, 1898.

³ Neurologisches Centralblatt, 1899, Nos. 3 and 4.

⁴ Revue Neurologique, March 30, 1899.

⁵ Journal of Nervous and Mental Disease, June, 1898.

⁶ Idem.

⁷ Deutsche Zeitschrift f. Nervenheilkunde, vol. xiii., Nos. 3 and 4.

⁸ Monats. für Psychiatrie und Neurologie, September, 1898, Band iv., Heft 3.

⁹ Neurologisches Centralblatt, 1899, No. 3.

Neuromata. Menke¹ has found multiple neuromata in a man whose mother, maternal grandmother, and maternal uncle had multiple neuromata. This is clear evidence of heredity of the affection.

Ascending Neuritis. The possibility of ascending neuritis has been seriously questioned. Marinesco reports a case, which he offers in evidence, of the occurrence of this form of disease. Sections of a nerve taken from gangrenous tissue in the leg were found to contain degenerated fibres, streptococci, and leucocytes, but sections from nerves nearer the cord contained leucocytes and no bacteria. Leucocytic perivascular infiltration and changes in the ganglion cells were found in the lumbosacral region of the cord on the side corresponding to the gangrenous leg. Marinesco² believed the poison produced by the streptococci was transmitted through the lymphatics of the peripheral nerves into the spinal cord. When this paper was read in Berlin, Oppenheim³ said he had never seen a case of ascending neuritis involving the spinal cord; he had seen only a few and uncertain cases of ascending neuritis. He thought, however, that the literature seemed to prove the possibility of ascending neuritis from a focus of infection—from a suppurating wound. This being granted, there could be little difficulty in accepting the possibility of involvement of the spinal cord by means of such neuritis. Remak was equally skeptical with Oppenheim regarding the occurrence of ascending neuritis without suppuration.

Rugh⁴ discusses the question of the existence of ascending neuritis, and refers to the opinion of a number of authorities, and reports a case of hysteria simulating quite closely one of ascending neuritis.

Syphilitic Multiple Neuritis. The case of multiple syphilitic neuritis reported by Fry⁵ was not accepted by all neurologists who heard the paper read as an example of this affection. The existence of multiple syphilitic neuritis is doubtful.

Recurrent Polyneuritis. The case of a man who was in his fifth attack of multiple neuritis is reported by Thomas.⁶ Only seven cases of this recurrent form of polyneuritis seem to have been reported, and the cause was not definitely known in any of these cases. The periods intervening between the attacks have varied very considerably. In certain of the cases each recurrence has been more severe than the preceding one. This brings up the question of recurrence in many forms of nervous disease. I have already referred to the recurrent facial

¹ Berl. klin. Wochenschrift, October 31, 1898.

² La Presse Médicale, November 23, 1898.

³ Verein für innere Medizin in Berlin. Vereins-Beitrag, No. 14, Deutsche med. Wochenschrift, May 12, 1898.

⁴ Journal of Nervous and Mental Disease, 1899, p. 210.

⁵ Ibid., 1898.

⁶ Philadelphia Medical Journal, May 14, 1898.

paralysis, and I might in this connection speak of the recurrent oculo-motor palsy.

A case of recurrent polyneuritis is reported by Schlier in which seven attacks (eight including one added in a footnote) were seen. Remarkable features in this case were the absence of paralysis of sensation, absence of tenderness to pressure over the nerve trunks, and the involvement of vital nerves (vagus, phrenic). The condition of the patellar reflexes was most unusual: the right was absent and the left was exaggerated, although the paralysis of the left lower limb was very marked. Pigmentation and increased growth of the hair on the limbs were also noteworthy. The etiology was unknown.

There seems to be a resemblance between this form of disease and the periodic family paralysis, although the differences (such as pain, duration of the process, and absence of heredity in the former) are marked. In both diseases there is a periodic motor paralysis, with absence of objective sensory disturbances. We do not know the pathology of the family periodic paralysis, and we might venture to suggest that it is a functional disorder of the peripheral motor neurons, due, as was supposed by Schlier¹ to be the cause in his case, to some unknown infection. It is not improbable that a recognition of a closer connection than now exists between recurrent neuritis of the motor type and family periodic paralysis will be established when both diseases are better known; at present they are among the curiosities of medical literature.

Heilbronner² has carefully studied four cases of multiple neuritis in alcoholic subjects. He found marked degenerative changes in the muscles; degeneration of the intramedullary portion of the anterior roots, especially in the lumbar region; degeneration of the posterior roots and posterior columns, and chromatolysis of the nerve cells. He believes that the spinal lesions were neither the cause nor the effect of the peripheral lesions, but that the central and peripheral changes were due to the same poison. He discusses a number of questions relating to neuritis.

Nerve Degeneration. The theory of degenerative changes beginning in the peripheral part of a motor neuron has been held by Erb, Strümpell and others; and Batten,³ by cutting nerves in dogs, has attempted to ascertain whether degeneration of the part of the neuron most remote from the cell takes place before other parts of it are similarly affected. He has found that after section degeneration of the medullated sheath of the nerve occurs in the whole course of the nerve at the same time, and that the centrally situated portions of the nerve suffer as soon as

¹ Zeitschrift f. klin. Med., vol. xxxvii., Nos. 1 and 2.

² Monats. für Psychiatrie und Neurologie, June, July, and August, 1898.

³ Brain, Autumn, 1898.

the peripheral. Changes were found within the terminal portion of the axis cylinder within twenty-four hours after section of the nerve.

We must be a little cautious in regarding these experiments as exactly analogous to pathological processes in man. When a nerve is cut the axis cylinder is also cut, and the axis cylinder and medullary sheath may degenerate at one time below the point of division. When a nerve fibre is diseased the axis cylinder is not necessarily as far advanced in degeneration as the medullary sheath, and we do not know to what extent the health of the medullary sheath depends upon that of the axis cylinder. I have seen distinct degeneration of the myelin at a point of pressure without its causing either ascending or descending degeneration.

Alteration of Nerves from Vascular Disease. This has always been a disputed question. Lapinsky¹ has studied the nerves in eight cases of gangrene of the extremities resulting from disease of the vessels. He found the connective tissue and vessels of the nerves much altered, but the nerve fibres were only slightly affected, except where the endoneurium was much thickened; here the nerve fibres were small.

Neuralgia from Nephritis. Neuralgia occurs in nephritis. Lapinsky² reports a case in which pain in the distribution of the sciatic nerves and tenderness of the nerves to pressure were complained of. Other symptoms of neuritis were absent. Degeneration and obliteration of the vasa nervorum, hyperæmia, cellular infiltration of the epineurium and endoneurium, and some degeneration of the myelin were found. Lapinsky thinks that the neuralgia of nephritis is due not only to toxic causes but also to changes within the nerves resulting from vascular degeneration. While the findings in this case are not those of a very pronounced neuritis, the case well illustrates the close relation between neuralgia and neuritis.

Nervous Origin of Chronic Rheumatism. There are, according to Pitres and Carrière,³ eleven observations in literature in which chronic articular rheumatism was found associated with peripheral neuritis. They add two more cases to this number. Up to this time three cases of chronic articular rheumatism have been reported in which the central and peripheral nervous system was normal, one with spinal meningitis, thirteen with peripheral neuritis, and six with lesions of the spinal cord. In the latter cases the peripheral nerves also were much altered. Pitres and Carrière do not express themselves very clearly regarding the relation of this neuritis to chronic articular rheumatism, and we are certainly justified in maintaining a scientific skepticism, until more proof

¹ *Deutsche Zeit. für Nerv.*, Band xiii., Heft 5 and 6.
Neurologisches Centralblatt, October 15, 1898.

² *Archives Cliniques de Bordeaux*, August, 1898.

is offered that the two conditions are related, although this possibility may exist.

Fifth Nerve Lesions. Hagelstam¹ reports a case of endothelioma of the base of the brain causing complete destruction of the Gasserian ganglion, and yet hemiatrophy of the face was not observed. The case is one more in evidence that trophic fibres are not contained in the fifth nerve, although the so-called trophic lesions may be produced from injury of the fifth nerve. Taste was lost on the anterior part of the tongue on the side corresponding to the new growth, and the sense of smell was impaired. Secondary degenerative changes were noticed in the central and peripheral portions of the fifth nerve.

Hereditary Optic Neuritis. This occurrence in three persons out of two separated families has been noted by Wagenmann.² Twin brothers were affected in one family. In the second family the males had been afflicted with optic neuritis near the twentieth year for three generations; the females escaped but transmitted the disease. This peculiar malady has been noted by a number of observers.

Vossius³ also reports hereditary optic neuritis occurring in three generations of a family and usually only in the male members.

Dislocation of the Ulnar Nerve. It seems that only twenty-six cases of dislocation of the ulnar nerve are on record, one of these being Jopson's⁴ case. When this condition is present a cord can be felt slipping over the internal condyle on flexion and going back again on extension, movable under the finger and causing tingling sensations when pressed upon. Fixation with a splint and compress may be useful in traumatic cases if employed soon after the occurrence of the dislocation, although the results have not been favorable. In seven out of eight cases operation has resulted in cure.

Progressive Neural Atrophy. This seems to be a form of neuritis. Siemerling⁵ reports a case with necropsy. His findings were not unlike the few which have previously been reported, and consisted in degeneration of the posterior and lateral columns, most marked in the lower thoracic and upper lumbar regions, atrophy of the cells of the anterior horns, of Clarke's columns, of the anterior roots, degeneration of the spinal ganglia, peripheral nerves, and muscles. Degeneration of the nerves, muscles, and posterior columns has been found in the few cases which have come to necropsy. The cells of the anterior horns have been affected in some instances. The clinical diagnosis of this

¹ *Dent. Zeit. f. Nerv.*, vol. xiii., Nos. 3 and 4.

² *Munch. med. Woch.*, No. 31, p. 1014.

³ *Vereins-Beitrage, Deutsche medicin. Wochenschrift*, November 10, 1898.

⁴ *Philadelphia Medical Journal*, September 10, 1898.

⁵ *Archiv für Psychiatrie*, vol. xxxi., Nos. 1 and 2.

form of muscular atrophy may at times be very difficult, and, indeed, we are beginning to feel even more uncertain than we were a few years ago in forming any clinical diagnosis of muscular atrophy.

Paralysis from Division of the Sensory Nerves. Loss of motion has been stated to occur after cutting the sensory roots. Bickel¹ asserts that a dog has almost the normal movements of the hind limbs after a few weeks have elapsed, even though all the sensory roots pertaining to these limbs have been cut. This proves that the function of the sensory nerves in the dog is not so indispensable for motility of these parts as has been supposed. Bickel believes that if all the centripetal nerves of an animal were cut the animal would be completely paralyzed, but that a single extremity is not paralyzed when its sensory nerves are destroyed.

Sympathetic Nerve. Onuf and Collins² have made some valuable experiments on the localization of the sympathetic nerve in the spinal cord. The importance which they attribute to the cells of the intermediate gray matter, in connection with the sympathetic system, possibly helps us to understand the so-called trophic lesions of syringomyelia.

Polymyositis. In this disease nerves as well as muscles are attacked. The muscles are at first very tender, and afterward undergo hardening and contraction. It is probable that in many cases diagnosticated as polyneuritis the muscles are much affected, and it is questionable whether any sharp dividing lines can be made between polymyositis and polyneuritis. A case of polymyositis is reported by Gowers.³ A woman of thirty-six years began to have pain in the back and loins. A rash appeared on the hands and arms. Pain was felt in the hands and ankles, and the hands and feet became weak. After some months the woman was almost entirely paralyzed, and the arms and legs were rigid and in flexion. Perspiration was excessive. The muscles of the face were also involved, and the neck and back were rigid. The patient was moved in bed as one piece. The muscles reacted very slightly to strong electrical stimulation, but reaction of degeneration was not noted. Sensation in the upper and lower limbs was normal. The deep reflexes were lost. Much improvement was effected in the lower limbs by massage, electricity, etc., but not in the upper.

Muscular Dystrophy. The method of climbing upon the lower limbs, which patients suffering from the pseudo-hypertrophic form of muscular dystrophy frequently employ, has been considered by many as almost pathognomonic of this form of muscular disease, but Minor⁴ points out that such an opinion is incorrect. Patients suffering from lumbago or

¹ Deutsche Zeitschrift f. Nerv., vol. xiii., Nos. 3 and 4.

² Journal of Nervous and Mental Disease, 1898.

³ The British Medical Journal, January 14, 1899.

⁴ Deutsche med. Wochenschrift, 1898, xxiii. and xxiv.

traumatic pain in the back not infrequently rise from the floor by climbing upon themselves, as by so doing the erector muscles of the trunk are not brought into play to any extent.

In sciatica, also, the method of rising from the sitting posture is peculiar, and is exactly opposite to that seen when lumbar pain is present, though the object to be attained, the relief of the extensor muscles of the trunk, is the same in the two conditions. When a patient with sciatica is placed on the ground and told to rise, he extends fully the sound limb while the painful one is slightly flexed at the knee. He raises himself with his hands behind his back on the floor, flexes the knees, shoves the pelvis backward, and raises the trunk from the ground by leaning on one hand. When lumbago is changing to sciatica the method of rising varies according to the preponderance of the pain in the limb or back.

Eshner¹ has collected the reports of twenty cases of muscular dystrophy, and gives some very interesting statistics. From the extracts from a number of letters received by him it is evident that muscular dystrophy is rare in the negro race.

Cassirer² has reported some interesting cases of muscular atrophy, and Hare³ describes a case of universal muscular atrophy which seemed to be due to rheumatic arthritis.

Thomsen's Disease. This is such a rare malady that every case is worthy of report. An atypical example of the disease, in which symptoms of paramyotonia and atrophy of certain muscles in the forearm and hands were present, is described by Bernhardt.⁴ The paramyotonia of Eulenburg is a peculiar malady in which the motor disturbance results from a moderate degree of cold. Certain forms of myotonia differ considerably from the disease described by Thomsen. It seems that Leyden described a case of the so-called Thomsen's disease before Thomsen directed attention to this affection, and it is questionable, therefore, whether the honor of naming the disease should be given so completely to Thomsen.

Myotonia. A case which developed after typhoid fever and another which developed after injury and overstrain are reported by Jacoby.⁵ Such cases as these he separates clearly from Thomsen's disease. He speaks of myotonia congenita, myotonia acquisita, and myotonia transitoria. It seems to him permissible to look upon the disease as due to embryonal developmental disorder of the nerve cells, consisting in the more or less diminished resistance of these cells to the influence of

¹ American Journal of the Medical Sciences, cxvi.

² Monats. für Psychiatrie und Neurologie, 1898.

³ Journal of Nervous and Mental Disease, June, 1898.

⁴ Deutsche med. Wochenschrift, 1899, No. 11.

⁵ Journal of Nervous and Mental Disease, 1898.

certain toxic processes. These intoxications are in such predisposed individuals the direct producers of the disease.

FUNCTIONAL DISORDERS.

Spastic Pseudo-paresis. A case of that rare functional disease named by Krafft-Ebing spastic pseudo-paresis has been observed by Hoefflmayr.¹ The patient, a man of fifty-four years, had been apparently paralyzed for a number of years. The weakness of all the limbs was extreme, and the patient could walk only a short distance, and then only when supported. The muscles of the neck and face were also paretic, and deglutition was at times difficult. The bladder and rectum were not affected. Tremor of the left arm was noticed. The deep reflexes were exaggerated, and the gait was very spastic. Sensation was normal. Sudden emotion had the effect of lessening the paralysis, and when angered he could administer a blow upon the ear of his son, though a moment later he could not raise his arm to feed himself. Gymnastic exercises were of the greatest benefit. The recognition of the functional nature of such disorders is of the utmost importance, for the recovery or improvement of the patient depends in large measure upon the diagnosis.

Traumatic Neurosis. Diller² reports a number of cases of nervous affections of neurasthenic or hysterical nature following trauma. He discusses the subject of "traumatic neuroses," and shows that they are very real affections—a view which all neurologists will undoubtedly accept.

The difficulty in making a diagnosis between organic and functional diseases is often great. Putnam³ speaks of the psychoses and neuroses following trauma, and shows the frequent occurrence of these disturbances.

Traumatic Paraplegia. A case reported by Nonne⁴ will probably be frequently quoted in the literature of spinal concussion. He describes paraplegia of the lower limbs following an injury to the back. Many of the symptoms seemed to indicate the existence of some organic disease of the vertebrae, but a necropsy with microscopical examination, made about two years after the accident, showed a normal condition of the vertebrae and spinal cord. The diagnosis was difficult. The case is one of considerable legal importance, and is an evidence of the fact that many of the paraplegias following trauma are of functional nature ;

¹ Münch. med. Wochenschrift, November 8, 1898.

² American Journal of the Medical Sciences, cxvi.

³ Journal of Nervous and Mental Disease, 1898.

⁴ Archiv für Psychiatric, vol. xxxi., No. 3.

but it must not be forgotten that the necropsy was performed about two years after the injury had been received, and that degeneration might have occurred, and yet caused no sclerosis.

The subject of spinal concussion is a most disputed one. Schmaus¹ reviews the literature, but adds no new facts. His conclusions are conservative. He acknowledges that in injury of the vertebrae the cord symptoms may be due to compression, hemorrhage, stretching, and tearing of the cord and its roots; he acknowledges, also, that no uncomplicated case of spinal concussion in man, with anatomical findings, has been reported, but he thinks that certain cases are probably examples of concussion. Experiments on animals have positively proved the occurrence of traumatic necrosis of nerve tissue from concussion.

Kirchgaesser² has examined the spinal cord of rabbits in two more cases of concussion produced by blows upon the back, and has found by Marchi's method extensive degeneration of the white matter. The cellular changes were slight. I have found degeneration of the medullary sheaths in the spinal cord of a cat five days after severe spinal concussion.

Paramyoclonus. Schultze³ thinks that paramyoclonus multiplex, as described by Friedreich, should not be regarded as hysteria, and that the "myoclonie" of Unverricht is the same as chronic progressive chorea. There is no difference between the latter and infantile chorea in the appearance and distribution of the convulsive movements. Friedreich's paramyoclonus differs from chorea in the comparative weakness of the movements, in the absence of involvement of the facial distribution, even after the disease has existed a long time, in the absence of progression, and especially in the involvement of only a small number of symmetrical muscles.

Wille⁴ reports a case of *maladie des ties convulsifs*, which presented some atypical features. He states that Gilles de la Tourette's disease is a *maladie des ties impulsifs*; myoclonia a *maladie des ties convulsifs*—i. e., the movements in the former are more purposeful in character, and may begin in childhood.

I was able to observe three cases of hysterical hemiparesis or hemiplegia, in one of which rigidity of one pupil was carefully studied by Veasey and myself.⁵ This condition was believed to be a manifestation of hysteria. The reasons for this diagnosis were given, and cases in the literature relating to this subject were referred to.

¹ Münch. med. Wochenschrift, January 17, 1899.

² Deutsche Zeitschrift für Nervenheilkunde, Band xii., Heft 5 and 6.

³ Ibid., Band xiii., Heft 5 and 6.

⁴ Monats. für Psychiatrie und Neurologie, September, 1898.

⁵ Philadelphia Medical Journal, January 14, 1899.

Hysteria. The manifestations of hysteria are sometimes most curious. Strauss¹ reports a case of hysteria in a man on whom laparotomy was twice performed because of the clinical signs of intestinal stenosis. At neither operation could any sufficient organic cause be found for the symptoms. Another man under his observation, with the symptoms of œsophageal carcinoma, died, but no organic cause could be found for the obstruction of the œsophagus, which must, therefore, have been of functional nature.

Barth² reports a case in which different forms of hysterical dyspnoea were observed in succession. The man had tonic, then clonic, spasm of the diaphragm, then paralysis of the diaphragm, and paralysis of the diaphragm with clonic spasm of the abdominal muscles.

Hysteria in animals has been described, but the occurrence is not common. Higier³ reports two interesting cases. A kitten, after being bitten in the back by a dog, became at once paralyzed. When seen by Higier, five or six weeks after the injury, it moved only the forelegs and dragged the hind ones. The hind legs and the posterior third of the trunk on the ventral, dorsal, and lateral aspects were completely anæsthetic. The tail also was paralyzed. The bowels and bladder were not affected. A servant threw the cat out of the house on to the pavement; it alighted on all fours, ran away, and was permanently cured of a paralysis which had lasted two months.

The second case was in a bird. A cat threw a cage containing a canary to the floor, but was frightened away before it had injured the bird. The canary was found rigid, but recovered after being sprinkled with cold water. It was voiceless for more than six and a half weeks, after which period it regained the power of singing.

Potts⁴ has observed bradycardia which he believed was hysterical, as all other causes of slow heart were excluded. Hysterical bradycardia, he says, has escaped the attention of many writers on hysteria.

The condition known by the French as *diathèse* or *état d'opportunité de contracture* was present in a patient seen by Lilienfeld.⁵ The slightest irritation was sufficient to throw the patient into spasms. Even the tongue was affected. Hypnotism was effective for a time.

OCULAR SYMPTOMS OF HYSTERIA. The ocular signs of hysteria described by Casey A. Wood⁶ are very valuable. The approximation or coincidence of the *punctum proximum* and *functum remotum*, so that

¹ Berl. klin. Wochenschrift, September 19, 1898.

² Ibid., October 17, 24, 1898.

³ Neurologisches Centralblatt, July 1, 1898.

⁴ Philadelphia Medical Journal, July 9, 1898.

⁵ Deutsche med. Wochenschrift, 1898, xxvii.

⁶ American Journal of the Medical Sciences, January, 1899.

the patient reads fine print nearer the eye than usual, or at a fixed point, is almost conclusive evidence of hysteria. Hysterical myopia, resulting from spasm of the ciliary muscle, may be detected by the instillation into the eye of a solution of atropine. Wood regards the reversal of the order and extent of the fields for white and colors as positive evidence of the existence of hysteria. Spasm of the orbicular muscles is frequently associated with amaurosis and amblyopia, and is suspicious of hysteria. The peculiar affection occurring in children in which impairment of sight is associated with blepharospasm, mentioned later in this digest, does not seem to be hysterical. Among other hysterical ocular symptoms Wood mentions amblyopia, photophobia, monocular diplopia, ring scotoma, pseudo-paralytic ptosis.

RIGIDITY OF THE PUPIL IN HYSTERIA. The rigidity of the pupil in convulsive attacks has been regarded as of great diagnostic value in distinguishing between epilepsy and hysteria; but Karplus¹ says that every diagnosis of epilepsy which depends chiefly on the rigidity of the pupil during a convulsive attack is uncertain. Rigidity of the pupil is not uncommon in hysterical convulsions, and may begin some seconds before the convulsive attack and last several minutes after the attack is over. The occurrence of convulsive attacks during the night, and the involuntary evacuation of the bladder during the convulsion, may be seen in hysteria. Rigidity of the pupil does not occur in every hysterical convulsion, and when it is present the pupils are usually dilated, but may be contracted. Karplus has observed rigidity of the pupil in eleven cases of grand hysteria during the convulsive seizure, in three cases of hysterical loss of consciousness without convulsions, and in three cases of hysterical respiratory cramp. One pupil was never affected without the other.

Neurasthenia. A form of periodic circular or alternating neurasthenia, which resembles to some extent the periodic circular or alternating insanity, is mentioned by Dumin.² He thinks the former disease should not be classed among the psychoses. The subject has received some little attention from other writers.

Astasia-abasia is probably not always hysterical, and as an illustration of this I refer to two very interesting cases reported by Burr,³ exhibiting disorders of gait from delusions. One patient, a man, could not walk more than a few steps, although he could stand without difficulty, and move the legs well when in bed or seated in a chair. His disturbance of gait seemed to be due to the fear of falling into an imaginary hole in the floor. The other patient, a woman, had great diffi-

¹ Jahrbücher f. Psychiatrie und Neurologie, Band xvii., Heft 1 and 2, p. 1.

² Deutsche Zeitschrift für Nervenheilkunde, 1898, Band xiii., Heft 1, 2.

³ Philadelphia Medical Journal, July 2, 1898.

culty in walking in the house when the gas was lighted. Gaslight and artificial heat were the two things that she feared most, and that seemed to be the cause of her disturbance of gait.

The following case, reported by Stewart,¹ is one for diagnosis. A soldier, aged twenty-five years, had severe typhoid fever in India, and on recovering from coma found himself unable to use his left hand on account of stiffness of the fingers. Gradually the fingers became flexed, and the arm, foot, leg, and left side of the face became rigid, with constant hypertonicity and frequent tonic spasms. This condition made him resemble a patient with hemiplegia and descending sclerosis; but he had no paralysis, and all the muscular disability was due to antagonistic action of opposing muscles, otherwise there was no abnormality of the nervous system in any respect, except the unilateral spasm. The locomotory system was interfered with only in so far as the spasm, the contracture, and the consequent changes in joints and bones were concerned. He had had two attacks of mania since his illness began. The deep reflexes were exaggerated and there was no trace of the reaction of degeneration.

Stewart thought that the most probable diagnosis was either sclerosis following upon thrombosis affecting the right optic thalamus, or a non-hysterical functional condition of the whole right psycho-motor cortex, or of the gray matter of the right thalamus. Such a diagnosis cannot be regarded as very definite.

Meralgia Paræsthetica. Nawratzki² has found interstitial and parenchymatous neuritis of the external cutaneous nerves in the portion near the anterior superior spine of the ilium in a case of meralgia paræsthetica studied microscopically by him. The findings seem to support the mechanical theory of causation, and to justify the resection of the nerve proposed by me for obstinate cases. I feel quite sure from my observations that some of these cases of meralgia paræsthetica are purely functional. The number of reported cases of this disease is becoming quite large. V. Nartowski³ reports five cases and Musser and Sailer have seen a number.

An extraordinary combination of symptoms is reported by Wetzel.⁴ A single woman, seventy years old, who had arterio-sclerosis, but had been otherwise healthy, suffered from symmetrical gangrene (Raynaud's disease) involving the second toe of each foot. Multiple neuritis began in the lower extremities, and by extension finally caused death. Bilateral athetosis was observed in the feet.

¹ British Medical Journal, 1899.

² Neurologisches Centralblatt, 1899, No. 3, p. 133.

³ Ibid., December 1, 1898.

⁴ Münch. med. Wochenschrift, 1899, No. 13.

Huntington's Chorea. Even if Hallock¹ does not succeed in changing the name of Huntington's chorea to "dementia choreica"—and he probably will not succeed—he has done good service in emphasizing the dementia occurring in the disease, and the fact that mental deterioration may precede the chorea.

Collins² reports a case of Huntington's chorea in which he made a careful microscopical examination. He found thinness and atrophy of the cortex; a mottled cribriform appearance of the brain in transverse section, due to diminution in number and size of the ganglion cells, to increase of the perivascular and pericellular spaces, and to increased patency of the bloodvessels; degeneration of the ganglion cells of the cortex throughout the brain, especially of the large pyramids and polymorphous cells, and especially of those in the Rolandic area, with increase of neuroglia; slight disease of the bloodvessels; diminution in number of the nerve fibres of the cortex; slight degeneration of the pyramidal tracts of the spinal cord. The lesion was primarily a chronic parenchymatous degeneration of the cortex, especially of the motor area. Collins would make rather sharp distinctions between the lesions of chronic Sydenham's chorea and those of Huntington's chorea. Many more careful studies must be made before we can be satisfied that these two diseases can be completely separated in their pathology, or possibly even in their clinical appearances. Charecot was unable to regard Huntington's chorea as a distinct entity, and he offered some strong arguments in support of his views.

Chorea. Muratow³ confirms the observations made by Bonhoeffer. From the evidence furnished by these two writers, post-apoplectic chorea and athetosis seem to be indicative of a lesion in the fibres forming the anterior cerebellar peduncle and nucleus ruber, and connecting the cerebellum with the optic thalamus and lenticular nucleus. These forms of forced movements are evidence that the cerebral cortex is not primarily involved. These are very important statements and need further confirmation.

It seems that fatal chorea may occur from sinus thrombosis. Reinhold⁴ reports a case of chorea minor, with fatal termination, in a girl of twenty years, who had had chlorosis for some time and was in the early stages of pregnancy. Thrombosis of the cerebral sinuses was found. Reinhold believes that the thrombosis was the cause of the chorea, and that the pregnancy may have made the blood more coagulable. Sinus thrombosis is known to occur in chlorosis. Twenty-six cases of chorea

¹ *Journal of Nervous and Mental Disease*, 1898.

² *American Journal of the Medical Sciences*, cxvi.

³ *Monatsschrift für Psychiatrie und Neurologie*, vol. v., No. 3.

⁴ *Deutsche Zeitschrift für Nervenheilkunde*, Band xiii., Heft 5 and 6.

minor, with fatal termination, have been collected by Stern, but the results of the pathological examinations by no means harmonize. In a number of cases the findings were negative, and in others only œdema and hyperæmia were present. Choreiform movements have been observed in other cases of sinus thrombosis.

Migraine. A case of migraine in which, during one of the attacks, hemorrhage occurred into the orbit, retina, conjunctiva, and eyelids of the side on which the headache was felt, is reported by Bräsch and Levinsohn.¹ Hemorrhage had occurred in previous attacks. Hemorrhage during an attack of migraine is not entirely unknown, but hemorrhage into the orbit from any cause not traumatic is exceedingly rare. A hemorrhage in the brain, such as this one within the orbit, occurring during a migraine attack, might prove fatal. The cause of hemorrhage may possibly be a cause of the migraine.

Blindness following Blepharospasm. Baas² reports a case in a child two and a half years old. This affection is not unknown in children, but the number of cases is small. The blindness is only temporary, lasting for weeks or months, and occurs with closure of the lids persisting for some time. No cause for this blindness can be found within the eye or the optic nerve, and the ophthalmoscope reveals no abnormal condition. Various theories have been advanced to explain this peculiar symptom.

African Lethargy. This is an extremely rare disease in Europe and America. A man about sixty years of age, who slept all the time except when he was awakened to answer a question, was seen by Holzinger.³ The patient would immediately fall asleep after answering the question, or in the midst of a conversation. At night he had hallucinations of sight and his sleep was disturbed, otherwise the man was in good health. The disease was probably the African lethargy, for which no satisfactory explanation has been obtained from the autopsies.

Hemihypertrophy of the Face. Sabrazès and Cabannes⁴ report a very marked case of congenital facial hemihypertrophy. They have collected quite a number of cases from the literature.

Acromegaly. In a case of sarcoma angiomatodes of the base of the brain, reported by Pechkranz,⁵ not a trace of hypophysis was found in the sella. During life a considerable enlargement of the feet, lower part of the legs, hands, and face was noticed, and this enlargement presented the appearance of œdema, although it did not pit on pressure. The con-

¹ Berlin. klin. Wochenschrift, December 26, 1898.

² Münchener med. Wochenschrift, January 24, 1899.

³ Neurologisches Centralblatt, 1899, No. 1.

⁴ Nouvelle Iconographie de la Salpêtrière, 1898, vol. xi.

⁵ Neurologisches Centralblatt, 1899, Nos. 5 and 6.

dition was diagnosticated as myxœdema. Pechkranz asks whether this might not be considered a case of *pachyaeria mollis* (Arnold) as distinguished from *pachyaeria ossea*. The condition was evidently not that usually seen in acromegaly.

The relation of acromegaly to disease of the pituitary body has been a subject of much dispute. Burr and Riesman¹ advance a number of arguments in favor of the hypophysial origin of acromegaly, and they believe that the entire glandular structure of the hypophysis must be affected before acromegaly is produced.

Pearce Bailey² reports a case of acromegaly with necropsy. The thyroid gland was symmetrically enlarged. The sella turcica was occupied by a mass composed of the pituitary body and by an outgrowth from its anterior glandular lobe. The posterior neural portion of the pituitary seemed to be normal. The growth was regarded as an adenoma. The thyroid was nearly three times and the pituitary was more than eight times its normal weight. The thyroid presented dilatation of the acini, excess of colloid and cysts. The changes in the pituitary were of a parenchymatous character and were more than simple hypertrophy.

Bailey reports also the case of a man who had headache, paræsthesia, and pain in the limbs for several years, and dimness of vision five months before death. He was suddenly taken with symptoms of general cerebral involvement, complete blindness, and paralysis of some of the oculomotor nerves. Hemorrhage into the hypophysis cerebri was the immediate cause of death, but microscopic examination showed parenchymatous hypertrophy of the glandular portion of that organ, which antedated the bleeding. This case was regarded as representing possibly an early stage of acromegaly.

Pineles³ calls attention to the fact that acromegaly has been seen associated with myxœdema or Graves' disease, and that in some cases of cretinism or myxœdema the hypophysis has been found diseased. Disturbance of function of the sexual glands or of the pancreas (diabetes) is not uncommon in acromegaly. A certain relation seems to exist between these various glands. I may refer in this connection to the case of Pechkranz, mentioned above.

A case of acromegaly is reported by Neal, Smyth, and Shattock.⁴ A large tumor was found completely filling the pituitary fossa. Sections of the pituitary body revealed a remarkably uniform structure of polyhedral cells, somewhat large in size and without visible intervening substance. There was scarcely a trace of connective-tissue stroma, the cells closely filling the meshes of a capillary network and resting directly on

¹ Journal of Nervous and Mental Disease, 1899.

² Philadelphia Medical Journal, April 30, 1898.

³ Wiener klin. Wochenschrift, 1899, No. 5.

⁴ Lancet, July 23, 1898.

the capillary wall. The cells resembled those of the anterior lobe of the pituitary body. The changes were classed under the head of hypertrophy, as the tumor was encapsulated and the surrounding bone uninvolved.

Adiposis Dolorosa. Eshner¹ adds two new cases of adiposis dolorosa to the few already reported ; the paper is illustrated.

¹ Philadelphia Medical Journal, October 8, 1898.

OBSTETRICS.

BY RICHARD C. NORRIS, M.D.

PREGNANCY.

PREGNANCY, with considerable truth, has been called a nine-months' disease, and it is gratifying to observe that in recent years more attention has been paid to a careful study of the pregnant woman. The advances in bacteriology and pathology, the utilization of the newer facts of physics and of chemistry, have given an impetus to obstetric diagnosis and treatment. The woman about to become a mother may have the comforting assurance that her attendant is well informed as to the probable difficulties which may overtake her, and the time has gone by when such a patient sees her attendant for the first time after she is well advanced in her labor.

Toxæmia of Pregnancy. Some of the most interesting work during the current year has been a study of the toxæmia of pregnancy and its relation to many of the complications that arise throughout the nine months of gestation.

It is of special interest to note the studies of the auto-intoxication of pregnancy by Boufe at the *Congres periodique de Gynecologie*.¹ Boufe points out that the healthy organism is a manufactory in which poisons of various kinds are constantly produced. Some result from the katabolism of all cell life; some, like the bile, from the normal phenomena of digestion. The excretions are toxic. Apart from these poisons, produced by the organism itself, others are introduced into it from without; thus various toxic substances, such as the salts of potash, are introduced in food. Some are imbibed in the form of drink; micro-organisms inhabiting the alimentary canal produce others. The healthy body, in short, "makes incessant attempts at suicide by intoxication." It has, however, two sets of organs, whose duty it is to frustrate these attempts, organs of transformation or arrest, and organs of elimination. By the action of these protectors health is maintained.

The author next asks the question: Is there not during normal pregnancy an over-production of the usual poisons or a production of certain new ones peculiar to pregnancy? This he answers in the affirmative, with numerous references to Bouchard, Pinard, and other authorities on

¹ *Journal de Medecine de Bordeaux*, October, 1898.

the subject. The blood contains an abnormal quantity of leucomaines during pregnancy and the toxicity of the urine is decreased while that of the serum is increased. Again, certain characteristics of the pregnant state favor intoxication. Thus, there are fewer red corpuscles in the blood, the heart does extra work, as do the lungs, and an unusual strain is thrown upon the kidneys and upon the liver.

So far Boufe has been speaking of the healthy subject. Next he considers disease due to auto-intoxication apart from pregnancy, and then he asks: What happens when one of the organs of defence becomes inefficient in a pregnant woman? If there has been previous disease, this is aggravated and various complications arise. Apart from the pre-existent disease, the auto-intoxications of pregnancy are best considered by discussing the great generalization of Pinard, by which a long series of troubles are united under the name "hepatic toxæmia." A number of the complications of pregnancy depend directly upon faulty action of the liver, the kidney having a secondary though important rôle in their production.

The principal causes of this "liver insufficiency" are heredity, previous maladies, intestinal troubles, sedentary life, and last, but not least, the corset.

The commonest symptom is vomiting, which, with dyspepsia and constipation, shows a preliminary slight intoxication. Pruritus, though an early symptom, is a bad one. Ptyalism is frequent and sometimes severe; the poison which causes it is found in normal urine. Incurable vomiting, lasting after the fourth month, is a serious manifestation of the toxæmia. Insomnia, icterus, and acute yellow atrophy complete the sequence in those cases in which the liver trouble is most marked.

The nervous system may be the one affected, all portions of it being liable to attack, from the peripheral nerves to the cortex, as in the peripheral neuritis and the mania and melancholia of pregnancy.

The skin may suffer, as in herpes gestationalis and bronzing. Albuminuria is of frequent occurrence, apart from renal disease. Eclampsia is a sign or a complication of hepatic insufficiency.

Clinical, experimental, therapeutical, and pathological proofs are quoted, and the author passes on to the diagnosis of the hepatic toxæmia of pregnancy. The common subjective phenomena of pregnancy first call attention to the condition—neuralgia, irritable temper, and the like. The vomiting and salivation of early pregnancy also indicate slight intoxication. The urine is generally quite free from albumin, but the urea is decreased while the uric acid is increased in quantity, and extractives make their appearance. Glycosuria is a certain sign of hepatic deficiency; indican and peptones also appear in the urine. In healthy pregnancy, when the liver and kidneys are acting well, the toxicity of

the urine is less than in non-pregnant subjects. Defective action of the liver causes a relative increase in the toxicity of the urine of pregnancy, and defective renal action causes a relative decrease. Thus suppose the toxicity of the urine of a woman is known, she becomes pregnant and it decreases. Next, it increases again—poisons are getting past the liver and being excreted by the kidney after producing some symptoms of intoxication. Lastly, the toxicity of the urine decreases again. This means that the poisons are now passing both liver and kidney and are remaining in the circulation, the prognosis, of course, becoming serious. Albuminuria may occur at any stage.

The author's remarks as to treatment urge early prophylactic measures in the case of women who show the minor symptoms of hepatic toxæmia. The greatest of these is milk diet, but all the emunctories should be aided. The frequent use of drastic purgatives during pregnancy is said to do no harm.

Boufe gives his conclusions somewhat as follows: The auto-intoxications which exist normally in every one become apparent when the organs of defence are insufficient.

The normal auto-intoxications are increased during pregnancy, and the organs of defence are unusually strained at the same time.

Among the organs of defence one or another may be feeble, and may allow the effects of intoxication to appear.

The liver is the most important organ of defence, and after it the kidney.

If the kidney alone is defective, ordinary uræmia will be the only result.

The poisons existing in the serum are multiple, and behave differently in different subjects.

The diagnosis should be made early, and treatment should be directed toward improving the action of the liver. The whole theory is as yet *sub judice*. It would not be destroyed were it to be proved that the poisons referred to are the result of the life of micro-organisms. It has the advantage of explaining more of the facts in question than any previous theory.

It will thus be seen that the ordinary examination of the urine to detect the presence or absence of albumin is insufficient to properly estimate a pregnant patient's condition, and it is incumbent upon every practitioner of obstetrics to guard his patients from the dangers of toxæmia, and thus avert serious complications before or at the time of labor. Too much stress cannot be laid upon the importance of a critical study of all pregnant women to detect and avert the dangers of toxæmia.

Diet During Pregnancy. ITS RELATION TO SEX. Relative to the physiological changes incident to pregnancy, and depending upon certain

hygienic principles as applied to pregnant women, the theory of the determination of sex, as announced by Schenck, has created considerable interest within as well as without the medical profession.

Fothergill¹ says: "Let us try to see exactly what Schenck is doing. The various factors which, according to biological science, can have any effect in determining the sex of the fœtus have often been enumerated and discussed. The respective age, health, strength, sexual power, and nutritive conditions of the parents are generally mentioned. The influence of the food of the parents upon the sex of the fœtus has long been recognized, and, if I remember aright, a good deal about it may be read between the lines of Virgil's versified instructions on horse breeding. In their book on the *Evolution of Sex*, Geddes and Thomson have indicated that a physiological difference exists between the sexes, in that the chemical changes which occur in the body of the male are, on the whole, more rapid and complete than the corresponding changes in the female. A man, in one word, lives quicker than a woman. But tissue-change can be influenced by diet. Therefore, furnishing the as yet sexless embryo with food favoring tissue-change should tend to make it a male, while giving it a diet hindering tissue-change should produce a female. The truth of this has long since been tested by Born and others with frog-spawn. On low diet, about half of a number of tadpoles develop into female frogs; on a richer diet, about 70 per cent. become females; and by feeding as much as possible, over 90 per cent. of females may be secured. But, in the human subject, the only way of influencing the nutrition of the embryo is by regulating the diet of the mother. Thus it has been observed that in times of famine more male children are born than is usual. After a war in which many men are killed and hard times prevail the percentage of male children rises, and the population quickly consists again of males and females in the ordinary proportions. So much for previous observations. What Schenck is doing is this: He has elaborated a method of estimating the rapidity and completeness of tissue-change in the human female by delicate urine testing. He finds out whether or not the excreted products are completely oxidized, giving special attention to the carbohydrates. In order to give the greatest probability of a male child, the professor thinks the tissue-changes of the mother should be complete—in fact, as much as possible like those of a man. In cases, therefore, where a male child is desired he examines the excreta, and if the carbohydrates are fully oxidized he leaves well enough alone; but if he finds too much unoxidized sugar in the urine, he orders a special diet, which should be taken some months before pregnancy and during the early portion of

¹ Practitioner, July 11, 1898.

that period. A proteid diet is, of course, known to favor rapidity and completeness of tissue-change, and it is accordingly meat, as opposed to vegetable food, which is thought to favor the production of male children. So far as this goes, it is doubtless on a sound physiological basis, but the factors other than nutrition which play a part in sex-determination are so numerous that it seems doubtful whether Schenck's work will ever pass from being a matter of scientific interest into the stage of practical medicine."

ITS RELATION TO THE SIZE OF THE CHILD. Pradon¹ has revived the ancient device of starving the mother during pregnancy, in the hope of keeping the child small, the object being to deliver a full-time child alive through a contracted pelvis. He seems to have had a better result than some of the earlier experimenters. After keeping upon low diet a woman in her third pregnancy, he delivered her with forceps of a living child weighing eight pounds and eleven ounces. Her previous confinements ended in delivery by craniotomy of children weighing twelve and eleven pounds, respectively. It is, however, pretty well recognized that the foetus acts as a true parasite, and takes good care of its own nutrition without any regard to the results to the mother, for well-nourished children are often born of women suffering from advanced disease and much emaciated. Those interested in this subject should read the observations of Bidone² on the DIFFERENCES BETWEEN THE FETAL AND MATERNAL BLOOD IN CASES OF ANÆMIA during pregnancy. Nine cases are fully reported. In one the red corpuscles in the foetal blood were 4,266,400, as compared with 928,880 in the maternal blood. In another there were 5,859,000 red corpuscles in the foetal blood as compared with 1,581,000 in the maternal. The author concludes that extremely anæmic women may bear healthy children, and that it is but seldom that the artificial termination of gestation is indicated. He mentions conclusions of some other observers, which are, however, by no means in harmony with his own. It is difficult to draw the line between simple and pernicious anæmia, and with this in mind it is easy to understand how different observers have arrived at different conclusions on the subject of pregnancy and anæmia.

The Vomiting of Pregnancy. From the recent writings on this disease the conviction comes that the toxæmia of pregnancy is an important factor in the etiology of the severe and very grave varieties of vomiting during pregnancy. A neurasthenic or hysterical element has also been prominently brought forward, and its importance is enhanced by the fact that the nervous system readily succumbs to the effect of the toxins. Since Hewitt's monograph on the relation between uterine

¹ Monats. für Geburtshülfe und Gynäkologie, January, 1898.

² La Riforma Medica, April 12, 13, and 14, 1898.

displacement and the aggravated vomiting of pregnancy, all authors have assigned a very important place to uterine displacements as an etiological factor. It would appear now that a clearer notion of the pathology of pernicious vomiting is at hand which will favorably influence the treatment in the milder cases, and thus avert the rather common practice of trying in turn the innumerable remedies that have been suggested for this disease, while the patient goes from bad to worse, until the evidences of starvation are pronounced and a fatal termination is at hand. The secret of success in managing this disease is never to allow it to become severe. Persistent vomiting, accompanied by progressive signs of emaciation after the fourth month, is a disease not to be temporized with, and after a fair trial with treatment to be referred to later, and which should include measures directed against a toxæmia and toward improving a hysterical or neurasthenic temperament, the termination of pregnancy should be utilized. Klein¹ made a study of cases observed in the clinic at Munich, and thinks many cases are distinctly neurotic, though some are hysterical. The milder cases recover under careful feeding and proper discipline, and, in the event of slow improvement at the patient's home, the physician should insist upon placing the patient in a hospital, where a systematic rest treatment may be instituted. The most important contribution during the year is that by Bacon,² in which the neuropathic and toxic factors are justly given a prominent place. He says the later stages of hyperemesis are characterized by symptoms of starvation—that is, great emaciation and weakness, rapid pulse with low blood-pressure, faintness, frequent syncope, scanty, acid urine, with little or no chlorides, but with albumin, casts, and blood; increase in the specific gravity of the blood and increase in its alkalinity, obstinate constipation, and delirium. The temperature is also decreased from 1° to 4°, as it is in the later stages of starvation.

There are various possible ways of explaining vomitus gravidarum : (a) Direct vomiting may be produced by an abnormal condition of the vomiting centre, due either to the irritating effects of chemical substances, toxins, etc., circulating in the blood, or to nutritional changes caused by variations in blood-pressure in the medulla, or to other circulatory changes. (b) Reflex vomiting may be produced by sufficiently powerful impulses sent from the genital tract, causing an irritation of the vomiting centre. (c) Vomiting may be produced by a combination of influences affecting the vomiting centre both directly and reflexly. The vomiting centre may be made more irritable by circulatory poisons or by nutritional changes, and at the same time peripheral sources of

¹ Zeitschrift für Geburtshilfe und Gynäkologie, 1898, Band xxxix., Heft I.

² American Journal of the Medical Sciences, June, 1898.

irritation may be created by the same factors as act on the vomiting centre, or by other co-operating factors. (*d*) Still another possible cause of vomitus gravidarum is the psychopathic factor, like that which exists in the vomiting of hysteria.

Neither a theory of reflex irritation from the genital tract nor a theory of direct vomiting from irritation of the vomiting centre suffices to explain all the phenomena. We must assume that in two-thirds of all cases of pregnancy there exists an increased irritability of the medullary centres, due wholly or in part to one or both of these two factors: (*a*) Nutritional changes resulting from circulatory disturbances; (*b*) poisoning from toxic elements circulating in the blood. We must further assume that this abnormally irritable vomiting centre is acted upon by afferent impulses sent from one or more of a variety of peripheral sources. Among the most important causes of reflex irritation are an incarcerated retroflexed uterus, abnormal adhesions of the uterus, pathological changes in the uterine wall resulting from endometritis, pelvic congestion, constipation, gastritis, etc. To these sources of afferent impulses we must add the psychopathic or hysterical condition, which is of especial importance in the more serious cases.

In the diagnosis of vomitus gravidarum the pathological conditions which have no connection with pregnancy, such as meningitis, traumatism, uremia, hernia, etc., are generally easy to distinguish. The problem of diagnosis also requires the separation of the different sources of peripheral irritation. We thus have, beside hysteria, the irritation outside of the genital tract, of the stomach, intestines, kidneys and peritoneum, and from the uterus, where the trouble may be from flexion, prolapse, endometritis, adhesions, etc.

THE PROGNOSIS in emesis and in the early stages of hyperemesis gravidarum depends chiefly on the possibility of instituting proper treatment. In severe hyperemesis the prognosis also depends on the seriousness of the changes in the vital organs as the result of starvation.

TREATMENT. The obstetrician is generally not called until the vomiting is quite severe. Prophylaxis here consists in preventing the graver forms, and includes the cure of anaemia, restriction of diet, the prevention of constipation, the correction of retrodisplacements of the uterus, and the cure of adhesions of the uterus as far as possible by massage. Especial attention should be given to the mental condition of the patient. The cases are particularly bad where a child is not wanted. Those patients who have no self-control are the most serious cases.

Rules of hygiene are especially important. Regular eating and bathing, proper clothing, suitable exercise, enough sleep, and massage, if necessary, are all to be attended to. Often account should be taken of the reading and amusements of the patient.

TREATMENT OF HYPEREMESIS GRAVIDARUM, EXCEPT THE EXTREME CASES. The indications are, first, to allay excessive irritability of the nervous centres. Second, combat the neuropathic condition, hysteria, by strengthening the will. Third, remove the source of peripheral irritation.

The abnormal irritability of the central nervous system, which especially interests us, may be due to the deranged nutrition or to intoxication. In any case, it is best allayed by providing a steady circulation of the blood, with an equal blood-pressure and good elimination.

For maintaining a proper intracranial circulation the horizontal position is necessary, and this measure alone is the most important of all things in treating the vomiting of pregnancy, as it is in the allied condition of seasickness. The position must be constantly and persistently maintained. It is often desirable to have the head lower than the feet. All nourishment must be given without raising the head. During vomiting the patient must be turned on the side, and on no account be raised. These details are so important, and yet so often neglected, that they must be emphasized and often repeated. Absolute rest in the horizontal position also serves another important purpose—viz., it insures against unnecessary loss of strength and vital energy.

In extreme cases the fatal results are from inanition. When there is no fresh supply of food the body has a limited store of energy, and when the usual amount, which comprises less than one-half the body-weight, is consumed the patient must die; hence it becomes very important to restrict the amount of energy consumed and avoid all waste from unnecessary movements until the possibility of a new supply is established.

Other ways of maintaining a normal circulation consist (*a*) in stimulating the cutaneous capillary circulation by topical applications, and (*b*) in hypodermatic injections into the diminished blood-current of artificial serum, either through the intestinal or subcutaneous route. Peripheral vascular stimulation, secured by sinapisms or by the hot-water bag to the epigastrium or to the feet, should, of course, not be neglected, and warm clothing, to prevent cutaneous capillary obstruction, as well as to preserve the heat and energy of the body, is useful.

The use of drugs which act on the circulation is not unattended with risk because of unpleasant action on other organs of the body. Nuxvomica or strychnine may be one of the most valuable of these agents. Whether the bitter stomachics, including the recent and now popular orexinum basicum, so warmly recommended by Frommel, Reeh, and others, act on the circulation or locally on the stomach is not determined.

The value of intravenous or subcutaneous injections of salt solution

in raising the blood-pressure and stimulating the circulation is now well established.

If the abnormal irritability of pregnancy be due to intoxication the need of thorough elimination is apparent. This elimination is secured in ordinary cases by careful attention to the skin, by means of baths and proper clothing, by preventing constipation, and by furnishing the system with as much water as possible, to aid the renal excretion. In hyperemesis gravidarum the urine becomes very scanty. Here the subcutaneous salt solution acts very promptly and efficiently.

Nerve sedatives can be used in hyperemesis gravidarum only with great caution. If morphine is used quite large quantities must be employed, and its effects are in general bad. Chloral has cured cases that no other drug has helped.

In the management of hysterical cases it is often best for the obstetrician to plainly inform the patient that the control of the vomiting is possible by an exercise of the will, and insist that she make the effort. In many cases suggestion has been employed. It is very likely that many of the cures from Copeman's dilatation of the cervix, from cauterizing the external os uteri with nitrate of silver, from the use of electricity, etc., are due simply to suggestion. Hence, in planning the course of treatment of a case of hyperemesis gravidarum, it is very important to examine the patient very carefully, to determine the presence of a hereditary tendency to hysteria and to search for hysterical stigmata. Having found a neuropathic element, we should not neglect the well-established principle of treatment of hysterical patients. The most important measure is separation from friends and relatives. In these cases they form the worst possible nurses. Let the patient be isolated under the care of an intelligent nurse experienced in these cases, and be subjected to a regime consisting of frequent feedings, massage, baths, etc.

To briefly sum up the suggestions regarding treatment, we would say :

1. The abnormal irritability of the nervous system, including the vomiting centre, is to be allayed by keeping the patient in the horizontal position, by attention to the skin and bowels and kidneys, using rectal, and, if necessary, hypodermatic injections of salt solution.

2. The hysterical condition which is so commonly found present should be controlled by strengthening the will and influencing the dominant ideas of the patient.

3. All sources of peripheral irritation should be discovered and treated.

4. In extreme cases subcutaneous saline injections serve the threefold purpose of (*a*) diluting the blood and increasing vascular tension ; (*b*) eliminating toxins through renal and intestinal excretories ; (*c*) furnishing two most important kinds of food.

5. Induction of abortion is never indicated. At a stage when it is safe and efficient it is not necessary, and in extreme cases it adds greatly to the danger, rarely stops the vomiting, and can be substituted by the artificial serum.

I cannot agree with this statement that induction of abortion is never indicated. It can be safe and efficient if undertaken before the patient is moribund. As in the treatment of kidney inefficiency during pregnancy, the termination of pregnancy should be promptly accomplished after a thorough and rigid treatment, carried out for a reasonable time, fails to show the slightest improvement in the patient. The frequently fatal termination is doubtless very often due to the delay in interference, the physician hoping from day to day that some other untried remedy may be efficient.

The Heart During Pregnancy. M. Vaquez and Millet¹ reopen the discussion on the "Effect of Pregnancy on the Heart." Larcher regarded cardiac hypertrophy as a normal condition of pregnancy, but Löhlein and Gerhardt, from post-mortem observations, threw great doubt on this view. Later Ducrest and Bollinger, from the examination of the hearts respectively of one hundred and seventy-six women who had died in puerperium, succeeded in re-establishing Larcher's view. Droyzel showed that the wall of both ventricles was increased in thickness, and that the capacity of the chambers was simultaneously increased; there was a steady progress of this hypertrophy from the early months of pregnancy right up to labor, after which the normal condition was rapidly restored. Spiegelberg showed that the quantity of blood was largely increased in pregnancy, and assigned the condition to this, while others attributed it to the increased work of the heart in supplying the gravid uterus. Vaquez and Millet, however, consider that the evidences of hypertrophy will not stand scrutiny, because the observers took no account of intercurrent troubles, such as Bright's disease. Vinay, too,² has shown that the pulse tension is normal in pregnancy, except in the presence of albuminuria. The authors examined the hearts of a large number of pregnant women by percussion on very frequent occasions, and failed to detect hypertrophy, except where there was some collateral circumstance to account for it. Delevenne has shown by the increased depth and rate of respiration in pregnancy that the circulation of air in the lung is increased, and, as there is a direct relation between the circulation of air and blood in the lung, it is reasonable to conclude that the vascular activity of the lung is also increased in pregnancy. This will explain the dyspnoea induced by exertion in pregnancy from inability of the lung and pulmonary circulation

¹ *La Presse Médicale*, February 2, 1898.

² *Archives de Tocologie*, 1893, vol. xx.

to adapt themselves to the increased demands of the economy. The increase of intrapulmonary vascular tension is confirmed by the not infrequent accentuation of the pulmonary second sound and the reduplication of the second sound at the base of the heart in the course of pregnancy; clinically, too, the frequency of pulmonary congestions and of hæmoptyses, quite apart from any cardiac or tubercular lesion, have a similar significance. Given this condition of the pulmonary circulation, it is easy to understand that any overexertion or weakness of the heart-muscle will induce dilatation of the right ventricle. Such dilatation is probably not very frequent in the course of pregnancy; but when it does occur it is essentially a pathological phenomenon.

Every one is familiar with the malign influence of pregnancy on the diseased heart, but the why and the wherefore have never been satisfactorily explained. The breakdown has frequently been attributed to fatty degeneration of the heart-muscle or to myocarditis, but Vaquez and Millet hold very strongly that these are factors of quite subsidiary importance, which, at the most, only pave the way for the occurrence of the essential lesions. The hyperactivity of the pulmonary circulation is not, as we have seen, always well tolerated by the healthy heart, still less so by the diseased heart, and the troubles which in the one case are transitory, in the other become persistent and serious. Thus the capillaries and venules of the heart become so engorged and distended as to lead to rupture of their walls, producing true myocardial apoplexies. In the drawings of the microscopic sections which the authors append to their paper these hemorrhagic foci are shown at various intervals from the time of their occurrence. Some are recent, and show by their relation to a ruptured venule their obvious causation; others are of longer standing, and show distinct evidence of inflammatory reaction. These hemorrhages have their seat of election in the left auricle, and are most often associated with mitral stenosis and the resultant pulmonary apoplexies.

Mitral stenosis affords an almost insurmountable obstacle to the circulation of the blood, and the same mechanical causes which lead to stasis of blood in the capillaries of the lung and to pulmonary apoplexies induce a similar condition in the circulation of the myocardium. The predilection for the left auricle is merely an expression of the fact that the strain of mitral stenosis falls most severely on the left auricle. The advent of labor will, in the nature of things, precipitate rupture of the distended capillaries, for vascular tension is greatly increased during labor. This is in part due to the contractions of the uterus narrowing the calibre of the uterine vessels, and in part to the venous stagnation which results from the forced expiratory efforts of labor. If at this crisis multiple apoplexies occur from the distended vessels of the myo-

cardium, collapse of the heart is only too likely to occur. In this way the myocardial hemorrhages fall into line with the well-recognized pulmonary apoplexies of pregnancy and parturition. Each is a simple mechanical phenomenon, the stress falling respectively on the vessels of the heart and of the lung.

The questions of practical importance that often present themselves to the physician are the desirability of marriage and pregnancy for patients who are suffering from cardiac disease; and, in the event of pregnancy, the means to be employed to avert the dangers of cardiac insufficiency. Many women, in spite of their heart disease, are able to surmount the dangers that threaten them. In a series of twenty-nine cases only one death occurred; yet in 40 per cent. of severe cases of chronic heart disease, von Leyden states death occurred during pregnancy or during the puerperal period. Oui,¹ discussing the cardiac complications of pregnancy and their treatment, gives the following guiding principles concerning the advisability of marriage and pregnancy in patients that are suffering from cardiac disease: If the cardiac muscle is healthy, if there never has been broken compensation, or if the patient lives in a condition that is favorable to rest, marriage and pregnancy may be authorized, although a lesion of one of the orifices of the heart exists. It is the duty of the physician, however, to inform the patient that if pregnancy occurs it will be necessary for her to place herself in such an environment that she may preserve her own life and that of her child, and that the necessary conditions for the accomplishment of this result should be prescribed by a physician. The patient should also be warned against the unhappy influence of too frequent pregnancies. On the other hand, it is necessary to advise against pregnancy in all those who have suffered loss of compensation, however slight, particularly if such loss of compensation accompanies mitral stenosis; in those cases in which the woman's social position does not allow her to take the necessary care of herself, and in those in which there is albuminuria, hepatic or pulmonary lesion.

It is a well-known fact that the danger of heart disease during pregnancy increases with each pregnancy, and that mitral stenosis is more unfavorable than aortic disease. It is very necessary to anticipate cardiac insufficiency, and for the avoidance of cardiac troubles during pregnancy, rest in bed and a milk diet are recommended; but some moderate exercise should be taken daily, and an absolute diet of milk is demanded only when signs of renal or hepatic congestion appear. If general symptoms of cardiac insufficiency supervene, digitalis is indicated; but if the pulmonary circulation is especially disturbed, as in mitral steno-

¹ *Gaz. Heb. de Med. et de Chirurg.*, January 15, 1899.

sis, absolute rest in bed, milk diet, hot applications over the chest, and theobromine or Dover's powder internally give the best results. If severe symptoms are present after the sixth month, and do not diminish after a month or six weeks of treatment, premature labor should be induced. Chloroform should be used in natural or induced labors in patients suffering from cardiac lesions. In cases of cardiac affections depending upon mitral stenosis, digitalis acts unfavorably; if the interference with the pulmonary circulation persists after labor, hypodermatic injections of morphine are most satisfactory.

Schlayer¹ cites three cases in which he induced labor, all of which ended fatally—one during labor and the others on the eighth and fourteenth days after labor. Phillips² has collected thirty-two cases in which labor was induced prematurely, and no less than twenty-two of these ended fatally. Vaquez and Millet consider that interference is not only justifiable but necessary in certain cases, and that early interference is the secret of success.

Labor complicated by heart disease should always be terminated as speedily as possible, using, if necessary, the forceps, or resorting to version and employing cautiously an anæsthetic. During the final delivery of the child rapid emptying of the uterus should be avoided, and Jess³ recommends having in readiness a sack of sand of from eight to ten pounds in weight, to be placed upon the abdomen to exert counter-pressure and counteract the sudden diminution of intra-abdominal pressure. Cardiac stimulants should be used immediately after delivery, and, if overdistention of the right side of the heart is threatened, venesection or nitrite of amyl are the measures available. It is also judicious to prolong the lying-in period to the extent of four or six weeks.

Abortion: Its Frequency, Causation, and Treatment. Bossi⁴ presents the following conclusions, based upon a study of a large number of abortions:

1. The large number of cases in which the cause of spontaneous abortion is unknown induces the belief that the etiology of the occurrence needs further study. 2. The frequency of abortion, as found by the author in statistics furnished by obstetricians in charge of out-practices among the poor, is much greater than that obtained from statistics given from hospital services only, and reaches about 25 per cent. 3. Clinically, the causes may be thus classified: (*a*) Traumatism and accidents of various kinds occurring at the time, corresponding to the menstrual period, or, in cases of habitual abortion, occurring at the period of preg-

¹ Zeitschrift für Geb. und Gynäk., 1892, xxiii. 29.

² The Practitioner, June, 1895.

³ Münchener medicinische Wochenschrift, 45 Jahrg., No. 41.

⁴ Ann. di Ost. e Gin., February, 1898.

nancy in which the previous miscarriage occurred. (b) Syphilis or some not well understood cause, which may be overcome by mercurial treatment, or, in some cases, by limited doses of the iodide of mercury. (c) Chronic affections of the cervix, the cervical canal, or the uterine cavity (cervicitis, endometritis), lacerations of the cervix, and pre-existent lesions of the appendages. (d) Retroversion of the uterus and other anomalies in its form and position. (e) Functional affections, deficient resistant force in the mother, grave rise in the mother's temperature, diffusion of infective processes from the mother to the fœtus, anomalies in the development of the ovum. 4. The rational prophylaxis of abortion depends upon a knowledge of the causation. 5. In the treatment of abortion we should always endeavor to ascertain whether it is possible to avoid, or, in other words, we should consider it as inevitable only when we find death of the fœtus, rupture of the ovum, dilatation of the cervix uteri, descent of the ovum in the cervical canal, and hence total or nearly total detachment from the uterine walls. 6. The treatment of curable abortion is of two kinds: The first, or *general treatment*, includes the administration of opiates, of viburnum prunifolium, tincture of piscidia, hydrastis canadensis, etc. *Treatment directed to the cause* consists of precautions to be taken during the days corresponding to the menstrual period, in antisyphilitic remedies, local treatment for the vaginal and cervical lesions, and the cure of retroversion, prolapsus, etc. 7. Should abortion be inevitable, we must assist the process of detachment and expulsion of the ovum with the minimum possible loss of blood, avoiding every source of infection. To this end hot vaginal douches will be found useful, and the administration of drugs which will not cause contraction of the uterus and incarceration of the ovum, such as hydrastis canadensis, bryonia alba, hamamelis virginica, sugar, small doses of quinine, and tamponing the vagina. To prevent the possibility of any portion of the ovular residua remaining in the uterine cavity, we should be careful not to rupture the ovule when it presents in the cervical canal, endeavoring not to extract it until it is detached from the uterine walls nor without the proper appliances. Should there be the slightest doubt as to its complete removal, the endometrium must be scraped and ergot must be given to the patient. In all cases several disinfectant intra-uterine douches should be given.

THE TREATMENT OF INCOMPLETE ABORTION is a subject upon which at the present time various opinions are held, more especially with regard to the method of evacuating the uterus. Sanger¹ is a firm advocate for dilatation of the cervical canal, with either the finger or Hegar's dilators. This having been accomplished, the finger must be introduced into the

¹ Centralbl. für Gynäk., 1898, No. 7.

cavity of the uterus. The curette should never be used without previous exploration by the finger. In this way the tissues can be accurately localized, and the curette may be safely used to remove them. For large masses of placenta or fibrinous polypi he uses the ovum forceps specially devised by him. In spontaneous and artificial abortion, up to the sixteenth week, he has often evacuated all the contents of the uterus at one sitting with this instrument. Usually, however, he uses a large, firm, sharp curette, carefully going over the whole surface of the uterus and flushing out the cavity. As a rule, he considers it unnecessary to pack the uterine cavity. If the uterus is emptied completely of its contents it contracts rapidly, and there is no fear of hemorrhage. In rare cases of atony it may be necessary to introduce gauze to act as a stimulant. Sanger, however, does not consider that gauze really drains the uterine cavity.

The use of laminaria tents is to be avoided if possible, and when used they should only be in aseptic cases, since the tent, even if hollow, checks the flow of uterine secretion and causes abnormal pressure in the uterine lymphatics, and even in the tubes. If used for cases of rigid internal os they should only remain twelve hours *in situ*.

In cases of sapræmic or septic infection of the uterine contents the curette may be safely used to remove the diseased tissue, since it is less liable to cause injury and fresh absorption than the finger. In these cases tents should *never* be used.

Gessner¹ (Berlin), replying to the previous paper, maintains that in abortion the use of the curette is unnecessary, and may be very harmful. He has treated over eight hundred cases successfully without it. He advises the introduction of the finger and the removal of all loose tissue. If the finger cannot remove the tissue then it is left. For the introduction of the finger anesthesia is usually necessary, as the procedure is painful. If the cervix does not admit the finger, laminaria tents may be adopted. According to his views, the use of the curette is attended by several dangers. Perforation of the uterine wall has occurred on many occasions; complete destruction of the epithelium, with stenosis of the uterine canal and even complete atresia, may follow. He therefore urges that the use of the curette should be abandoned in these cases.

Biermer,² replying to Gessner, strongly maintains that the curette, if carefully used, is the most satisfactory method of emptying the uterus. The danger of perforation may be minimized by the use of a large curette. It is also certain that even after careful curetting a large amount of glandular tissue remains, from which a fresh mucous membrane is formed, so that there is no real danger of occlusion or stenosis

¹ Centralbl. für Gynäk., 1898, No. 12.

² Ibid., 1898, No. 21.

of the uterine canal. In sapraemic cases, again, the introduction of the finger may, by lacerating the uterine tissues, cause parametric exudation in the broad ligament. It is also certain that the curette may be more readily sterilized than the finger.

Fraipont² also insists on the disadvantages and difficulties of introducing the finger into the uterus in every case, and much prefers the dilatation by Hegar's bougies, which can frequently be carried out without anæsthesia, followed by the use of the curette.

Fraipont² points out the great difficulty that is met with in effecting the sterilization of the hand, and that in cases where organisms are already present in the uterus the forcible evacuation of the uterus by the finger causes traumatism and eminently favors the dissemination of the organism into the cellular tissue. Since abortion is extremely common, it is important that clear views should be held on the subject, and an operation which can be done without anæsthesia presents great advantages. He is a firm advocate for the judicious use of the curette, the cervix being previously dilated, and in a large experience has never observed any of the accidents mentioned by Gessner, though all of them are possibilities. He points out that as soon as all *débris* is removed from the uterus, hemorrhage ceases and a good contraction is obtained. If there is any tendency to relaxation he inserts a strip of iodoform gauze into the uterine cavity.

Budin,³ in the course of a clinical lecture on the treatment of abortion, recommends expression of the uterine contents bimanually. He gives the details of three cases treated in this way. This method is not applicable to cases in which small fragments of tissue only remain in the uterus; but when the placenta is retained, or even the whole ovum, excellent results may be expected. The procedure is as follows: Anæsthesia is essential to obtain complete relaxation of the abdominal walls. Careful antiseptic precautions are taken, and the finger is introduced into the cavity of the uterus, dilatation, if necessary, being obtained by Hegar's dilators. With one or two fingers in the uterus and a hand on the abdomen the uterine contents are completely detached from its walls. When this is accomplished a hand is placed in the posterior fornix and the other hand on the abdomen. The body of the uterus is now firmly compressed, and in a large proportion of cases the contents are rapidly expelled. If the placenta is very bulky it may be necessary to break it up with the finger, in order to allow the pieces to come through the narrow cervix. The uterine cavity is again explored. If nothing remains an intra-uterine douche is given (bichloride, 1 : 4000) and the cavity is also swabbed out with wool dipped in the same solution.

¹ Centraltbl. für Gynäk., 1898, No. 21.

² Ann. Med. Chir. de Liege, June, 1898.

³ L'Obstétrique, September, 1898.

Glycerin-creosote is now applied to the uterine cavity, and, if necessary, a gauze tampon is introduced.

Budin specially warns us against the use of forceps of any kind to extract the contents of the uterus, and quotes several cases in which perforation and the pulling down of a loop of bowel have followed this procedure.

The above discussion fairly reflects the varied opinions as to the value and dangers of the curette and ovum forceps in the treatment of incomplete abortion. The question, I think, depends wholly upon individual skill and experience with instruments and upon a knowledge of the dangers that must be avoided. The finger can never take the place of the curette, properly used at the right time, in the treatment of incomplete abortion.

EXTRA-UTERINE PREGNANCY.

From a survey of the literature of extra-uterine pregnancy during the past year one is impressed by the fact that the importance of early diagnosis has been recognized, and there no longer remains any doubt about the necessity for prompt surgical treatment. The frequent study of fresh specimens furnished by operations has modified to some extent the pathology of this affection. The condition is essentially a surgical one, and the only question submitted for discussion is the route, whether the vaginal or abdominal is more desirable. During the current year the frequent employment of vaginal section for intrapelvic lesions has induced many operators to discuss vaginal section in its relation to the operative treatment of ectopic pregnancy. The limitations of the vaginal operation in this class of cases are gradually being evolved, and some unfortunate experiences in controlling hemorrhage, or the undesirable necessity for removing the uterus and both appendages, have, on the whole, limited the usefulness of vaginal section for extra-uterine pregnancy.

One of the most important contributions to the subject of extra-uterine pregnancy is that by Taylor,¹ who discusses tubal pregnancy and its complications, pointing out that modern surgery has established the fact that all cases of extra-uterine pregnancy are originally tubal or interstitial, and that the varieties which have been described by former observers could all be traced to tubal or interstitial origin. One of these varieties—the subperitoneo-pelvic or subperitoneo-abdominal form of broad ligament pregnancy—was very fully investigated by Benjamin Harte and Mr. Carter, and their monograph remains the standard reference for the

¹ *Lancet*, May 28, 1898.

general method in which the peritoneum may be displaced by a growth of this variety. Bland Sutton called attention to the fact that in the position known as "tubal mole" and "tubal abortion," in which the oviduct, affected by the misplaced pregnancy, is found to contain an apoplectic ovum instead of a growing fœtus, the abdominal ostium of the tube usually remained open, and that intraperitoneal hæmatocele was commonly due to the bleeding from the fimbriated end of a tube in which a mole had formed. The abdominal or ventral variety also has been proved to be a secondary development of tubal pregnancy.

As bearing upon the etiology of tubal pregnancy, Taylor declares that any want of development in the tube—permanent contraction, swelling of the mucous membrane, abnormal length of the tubes, extra weight or impaired mobility of the ovum at its entrance into the tube, any failure of muscular power or interference with the peristaltic action of the tube—may increase the tendency toward a tubal instead of a uterine settling of the ovum.

Writers heretofore have maintained that a pre-existing desquamative salpingitis is the cause of ectopic gestation, and that most cases have a previous history of inflammatory disease involving the uterine appendages. Taylor found in thirty-seven cases no certain evidence of any pre-existing inflammation.

In considering the diagnosis of extra-uterine pregnancy, he lays stress upon the increased vascularity of the parts affected, a very constant and valuable sign of which is the presence of pulsating vessels in the vaginal vault on the affected side. He speaks of this pulse as comparable to that of the radial artery, and although inflammatory complications may sometimes give rise to similar hyperæmia, the pulsation of the vessels is rarely so marked and so easy to elicit as in the presence of tubal pregnancy.

Conditions to be differentiated from extra-uterine pregnancy are pyosalpingitis with amenorrhœa, myoma, simple abortion, retroflexion of the gravid uterus, and twisting by pedunculated tumors of the tube or ovary.

The elements which aid in reaching a positive diagnosis in the early months are :

1. A patient within the child-bearing limits of age and one in whom pregnancy is possible.
2. She has recently been in good health.
3. It is more likely than not that several years have passed since her last pregnancy.
4. There is a history of some amenorrhœa accompanied or followed by
5. Regular uterine hemorrhage, occasionally profuse and red, but generally dark in color, moderate in amount, and persistent.

6. There may be a history of the discharge of some membrane either as a complete decidual cast, or in two or more pieces, or in threads.

7. Examination will find pulsating vessels in the vaginal vault on one side of the uterus.

8. On the same side, and extending back of the uterus, there is usually a tubal tumor.

9. This tumor enlarges markedly and suddenly by recurrent hemorrhages and by the formation of a hæmatocele directly continuous with the original tubal tumor.

10. These hemorrhages are accompanied by severe abdominal pain and by transient attacks of peritonitis.

11. The uterus is displaced by the hæmatocele—at first backward, afterward to the opposite side of the pelvis, and sometimes forward against the pubes.

12. The uterus, although slightly enlarged, may be proved to be empty.

Abdominal or ventral and interstitial extra-uterine pregnancy are of special interest.

The abdominal or ventral variety occurs when a fœtus which has been already formed within the oviduct escapes therefrom, encased in its unruptured membranes, into the abdomen of the mother.

If the placenta retains its attachment to the tube and receives sufficient blood from the maternal vessels the pregnancy may pursue an uninterrupted course to term, and both child and placenta may attain mature development within the peritoneal cavity of the mother. The protection of the unruptured amnion, however, appears to be absolutely indispensable for such development. This is contrary to the teachings of most gynecologists. The placenta in these cases lies in the expanded and metamorphosed tube. There are two other conditions in which the placenta may be found in advanced abdominal pregnancy. In the first the tube, although excessively expanded, may retain its individuality, and the placenta may be found still lying within it; in the other the abdominal position of the fetus may be associated with an intraligamentary placenta. It is worthy of note that a marked and unmistakable ligamentary sac is to be found when the fetus has really become abdominal after passing through an intraligamentary stage in its development. There are, accordingly, four different relations of the placenta to the main gestation-sac in abdominal pregnancy which need some differentiation. In the first group of cases the placenta is practically within the main gestation-sac and covered by reflections of the amnion. In the second it has a foetal and a maternal surface of nearly equal dimensions as in normal pregnancy, the foetal surface being covered by the amnion and in immediate relation to the sac, while the maternal surface is growing from the spread-out remnants of the tube and from the peri-

tubal tissues also, the back of the uterus, the broad ligament, and the pelvic wall being favorite sites for such extensions of attachment. In the third the placenta remains within the tube, which is still recognizable, and the maternal attachments are confined to the tube itself. Under such conditions there may be a double gestation-sac, the one containing the fetus, the other the placenta. In the fourth the placenta is attached to the upper wall of a broad ligament sac outside the peritoneum, and the cord passes to the child through a hole in the ligament. The sac in abdominal pregnancy evidently varies greatly in appearance and consistency. In many of the recorded cases it can hardly have consisted of anything more than the amniotic membrane. This has become attached to the peritoneum, "its epithelial lining becoming destroyed and its subepithelial layer becoming dense and fibrous" (Webster). In other situations the subepithelial layer has been unaffected, and the membrane is directly attached to the intestine or to the abdominal viscera, is indistinguishable by sight from the proper peritoneal surface of such viscera, and is only visible when reflected from one viscus to another, as already described. The membranes are not, however, necessarily adherent in this way; sometimes they have a completely independent existence, and probably all degrees are possible of partial peritoneal attachment. Sometimes their consistency and independence are such that they have been described as being extirpated (Tait) or sutured (Rosenmauer) at the operation for removal of the pregnancy. Cases so described are, however, sometimes open to the suspicion that an unrecognized broad-ligament pregnancy has been mistaken for an abdominal one. In true tubo-abdominal pregnancy the sac, consisting at the best of amnion and chorion, and often, perhaps, of an amniotic layer only, must always, if independent, be extremely thin and easily broken. If completely independent it may admit of removal with the child, but it is extremely doubtful whether it could ever possess sufficient independence and consistency to admit of any independent suture.

Beckmann¹ divides the cases of interstitial gestation into two groups: 1. *Tubo-uterine*, in which the communication between the uterine cavity and the tube persists; in these cases abortion may ensue and the ovum escape into the uterine cavity. 2. *True interstitial gestation*, in which the ectopic foetation is separated from the uterine cavity by a muscular septum of varying thickness. Natural termination is here impossible, and the pregnancy usually ends fatally by rupture.

The author relates a case of the latter variety. At the end of five months of gestation the patient showed signs of severe internal hemorrhage. The uterus felt enlarged, but no tubal swelling could be detected. Laparotomy was performed, a ruptured interstitial pregnancy discovered,

¹ *Zeit. für Geburts- und Gynäk.*, vol. xxxviii., c. 3, and *L'Obstetrique*, September, 1898.

and the uterus removed by supravaginal amputation. The patient recovered.

The author is inclined to suspect a ruptured interstitial gestation when, along with signs of severe internal hemorrhage, no tubal swelling can be made out and the uterus is enlarged, though less than one would anticipate from the duration of the pregnancy, which is usually in these cases from three to five months. Before rupture the diagnosis of interstitial pregnancy is often impossible; it may closely simulate normal pregnancy, or, especially, pregnancy in a rudimentary cornu.

In true interstitial pregnancy rupture inevitably takes place between three and five months, and nearly always into the peritoneal cavity. Death rapidly ensues from hemorrhage unless speedy operation is performed.

Few cases have as yet been diagnosed before rupture. With regard to treatment, if a diagnosis has been made before rupture the cervix may be dilated, the septum incised, and the embryo removed. This operation, however, would only be possible at two to three months, and would even then be difficult and dangerous. It is, therefore, wiser to open the abdomen and expose the sac. It may then be treated by incision and removal of the embryo and sac, followed by suture of the uterine wound. Often, however, supravaginal amputation of the cervix would be the preferable operation. After rupture similar treatment would be required. The vaginal route may be chosen for cases in which the fetal cyst is small and the uterus free from adhesions.

Balleray¹ summarizes a consideration of four described cases of extra-uterine pregnancy as follows. He is of the opinion that: (1) Early ectopic gestation may be diagnosed before rupture, provided an opportunity of pelvic exploration be given; (2) the best chance of differentiating an early ectopic gestation from conditions simulating it is by a careful vaginal and rectal examination under anaesthesia; (3) the use of the uterine sound for diagnostic purposes is permissible in cases of grave doubt; (4) in such cases, "whether or not early ectopic pregnancy be present, but when the presumption is strongly in favor of its existence, exploratory abdominal section is not only permissible but imperative;" (5) abdominal section is much preferable to vaginal operation; (6) all cases, except those of intraligamentous rupture, should be treated by operation as soon as diagnosis is made.

Neugebauer² relates a case of extra-uterine pregnancy, with extraction of a living child that lay free in the abdominal cavity. The patient was thirty-six years old, had menstruated first in her fourteenth year, and had always been regular. She had been married five years, and had given birth to two children and aborted once. The last menstrual period

¹ Medical News, January 29, 1898.

² Centralblatt f. Gynäkologie, July 30, 1898.

was shorter than usual (three days, instead of six or seven). Several days later she commenced to bleed again, and so continued to do for six weeks. The hemorrhage was accompanied by labor-like pains. The abdomen commenced to increase in size, and in the course of four months the woman felt the first foetal movements. These produced such severe pains that she was compelled to consult a physician. In the last three months her sufferings were so great that twice daily she received an injection of morphine. She ultimately entered the hospital. She had no fever, the lungs and heart were normal, and the urine did not contain sugar or albumin. The abdomen was irregularly enlarged, especially on the left side. Palpation detected the foetus lying with its back anteriorly and to the right, the buttocks directed to the left and the head out of reach, low down in the pelvis to the right. The foetal heart-sounds were normal. On vaginal examination the uterus was found to lie to the right and to be retroverted; it admitted a sound to the depth of 11 cm.; the vagina and pelvis were normal; the colostrum could be expressed from the breasts. The Röntgen rays were used without any practical results. The diagnosis was plain—extra-uterine pregnancy with a living child, which lay directly under the thinned-out abdominal wall. The operation was performed when the duration of pregnancy was estimated at 256 days. The patient was placed in Trendelenburg's position under chloroform-anæsthesia, and an incision 3 cm. above the umbilicus was carried to about 3 cm. above the symphysis. As soon as the peritoneum was opened the buttocks of the child projected, the child was quickly extracted, and the cord was caught between two Péan forceps and divided. The child cried and was placed in a couvense. The placenta was attached to the posterior wall of the bladder and was not very large; at the beginning of the abdominal incision it had commenced to separate, the hemorrhage being profuse. This was controlled by tamponing with Tavel's solution. A small part of the placenta was attached to the anterior uterine wall. After its removal the excavation was tamponed with iodoform gauze, the free end protruding through the abdominal incision. The child was 47 cm. long and weighed 2950 grammes. The patient made an uninterrupted recovery.

Recurrent Extra-uterine Pregnancy. An interesting phase of extra-uterine pregnancy is the report of one of those rare cases—recurrent extra-uterine gestation. Zangemeister¹ observed and fully reported three cases, and was able to find thirty-one others recorded by various observers. With regard to the etiology very little can be definitely stated. The mean age of the patients was twenty-nine years. The interval between the two ectopic pregnancies has been very variable—from six weeks to

¹ *Zeit. für Geburts- und Gynäk.*, vol. xxxviii., c. 3, and *L'Obstétrique*, September, 1898.

five years—and in some cases a normal pregnancy has intervened between the two abnormal gestations. In some cases operators have observed at the time of the first operation that the opposite tube was unhealthy, and in five cases the ovary was also observed to be enlarged or cystic.

Treatment. It is generally agreed that as an invariable rule all cases of extra-uterine pregnancy when recognized demand operative treatment.

Without operation Martin gives a mortality of 76 per cent., and Schauta of 86.8 per cent., while the results from operative treatment show a mortality, according to Kelly, of from 6 to 8 per cent. Ségond¹ discusses fully in a valuable paper the various methods of treatment to be applied to extra-uterine pregnancy in its different stages and complications. He discusses, first, the treatment before four months, and, second, the treatment after four months:

I. TREATMENT BEFORE FOUR MONTHS. (*a*) When the diagnosis is made of a developing fetus, with the sac still unruptured, immediate laparotomy with removal of the tube and ovary should be performed. Should the diagnosis be found to be incorrect no harm will have been done, since other conditions with which it might be confounded would demand similar operation. When one side only is involved, the other side being normal, Ségond advises abdominal section rather than operation per vaginam. If with tubal pregnancy on one side we have diseased appendages upon the other side, vaginal hysterectomy, with bilateral salpingo-oöphorectomy, is recommended. When a tumor of the uterus—fibroma or carcinoma—is associated with tubal gestation, a like course is to be recommended up to the fourth month. After this time the abdominal route, with probable hysterectomy, should be followed. Pregnancy in a rudimentary horn and tubo-interstitial pregnancy are always best treated through the abdominal opening. (*b*) Treatment before four months, when the fetus has ceased to develop or other complications are present. Under this head hemorrhage is considered, which is recognized as occurring in four distinct conditions, as follows:

1. *Hæmatosalpinx*, often associated with some effusion of blood into the peritoneum, but forming a distinct tumor which can be enucleated. Here Ségond considers abdominal section, with complete removal of the entire mass, to be the best treatment, although Martin, Muret, Kelly, and others have followed a more conservative method of operating through the vagina, opening the tube, removing the clot, and suturing. Probably to but few cases of tubal abortion or tubal mole would this method be applicable. Here, also, if a lesion is found in the other appendage, complete vaginal hysterectomy should be performed.

2. *Encysted Hæmatoëch.* With the exception of certain small hæm-

¹ Annales de Gynecologie, 1898.

toceles, which cause few symptoms and have a tendency to spontaneous cure, this class of cases is also best treated by operation. The mode of interference is a disputed question, but Ségond advises vaginal section. Complete cure with absorption of the exudate will follow in the majority of cases. If fresh hemorrhage or unexpected difficulties arise, or the other appendage is found to be diseased, vaginal hysterectomy can be performed. Douglas' pouch should be opened with a bistoury, and all pressure on the abdomen for the purpose of emptying the sac must be carefully avoided. This route is equally applicable to cases of subperitoneal pelvic hæmatocele and collections of blood at the sides of the pelvis. Laparotomy is only very occasionally necessary.

3. *Hæmatocele where Several Hemorrhages have Occurred.* The cause of this condition is usually rupture of the tube, and abdominal section is recommended. Cases are quoted in which cure has been obtained by vaginal section, but in another case, when this method was attempted, hemorrhage followed which necessitated opening the abdomen, and the patient afterward died.

4. *Hemorrhage into the Peritoneal Cavity.* This results from rupture of the tube, and is most apt to occur between the eighth and twelfth weeks. Tubal abortion will likewise cause profuse and fatal hemorrhage. The earlier the rupture the more dangerous it is; likewise the danger is greater if the peritoneum is healthy and free from inflammation and adhesions. In some cases the hemorrhage is fatal within a few hours. Expectant treatment, in the hope that the blood may become encysted, is entirely unjustifiable. Immediate abdominal operation is the only reasonable method of treatment.

5. *Treatment of Septic and Suppurative Complications.* The diagnosis of this condition is often difficult, especially as pelvic peritonitis and cystic or suppurative disease of the tube or ovary may be attended with tubal pregnancy. If the collection is limited, unilateral and easily accessible, the vaginal incision is to be preferred; but if the appendages are diseased on both sides, vaginal hysterectomy is recommended, provided the mass is not too great to be extracted per vaginam. If the gestation has passed the fourth month, and the mass has risen well out of the pelvis, the abdominal route should be followed, accompanied, if necessary, with complete hysterectomy.

II. TREATMENT OF EXTRA-UTERINE PREGNANCY AFTER FOUR MONTHS. (a) *If the Fetus is Living.* Here opinions differ widely. Some practitioners advise immediate operation, without regard to the life of the child. Others prefer to wait until after the seventh month, when the child is viable. The writer holds that unless it is possible to keep the mother under constant observation, prepared to operate at any moment in case unfavorable or dangerous symptoms arise, an operation

should be performed as soon as possible after the diagnosis has been made. Abdominal section is the only method to be considered. Ségond advises that the placenta should usually be undisturbed, but the fetal sac should be drawn outside the peritoneum and there stitched. To this, however, he makes the following exceptions: (1) If the entire removal of the sac and the placenta appears easy; (2) if the placenta is partially detached and hemorrhage is continuing; (3) when the fetus lies free in the abdominal cavity and no sac is found—in all of these the placenta should be removed before closing the abdomen.

(b) *If Complications Arise or the Fetus Dies.* Internal hemorrhage may occur at any time. Here operation is almost imperative, and it is frequently necessary to remove the placenta on account of its partial detachment. Should any signs of infection appear, with the death of the fetus, operation should be performed at once and the placenta removed, if possible. When this cannot be done the sac must be stitched outside the peritoneum and drained.

When the fetus is dead Ségond advises waiting for several weeks—from four to six—to enable the placental circulation to become somewhat obliterated before operating. Here, generally, the sac should be rendered extra-peritoneal and the placenta left behind. If the fetus has been long dead the same treatment is to be followed, but if the sac is adherent and so low in the pelvis that it cannot be removed, a counter-opening for drainage should be made in the vagina. In some cases, where neither of the above methods are advisable, it may be best to remove the uterus. In the presence of a tumor of the uterus, and in the rare cases of interstitial pregnancy, hysterectomy may also be required. In a few rare instances the gestation-sac has been known to remain for years without causing trouble, but it may suppurate at any time. The cyst so formed may occasionally be removed by abdominal section, or, if fixed low down in the pelvis, may be drained by vaginal incision. If drainage has taken place spontaneously into the rectum, vagina, or bladder, or through the abdominal wall, dilatation of the opening will usually permit complete removal of the contents. When, however, an opening has occurred into the rectum, it is usually advisable to make a counter-opening into the vagina or through the abdominal wall.

Haggard¹ states very fairly the claims of vaginal operations when he remarks that in cases of unruptured ectopic gestation the vaginal operation, if congenial to the surgeon, may be elected. In non-active cases of encysted hematocoele, vaginal section and drainage constitute the operation of choice. The situation of the mass low down, and the broad,

¹ American Gynecological and Obstetrical Journal, July, 1898.

roomy vagina of parous women are favorable to the lower route. He wisely remarks that before evacuating ectopic collections of the vagina preparation for abdominal section should be made, since in cases where there is free or uncontrollable hemorrhage while removing the products of ectopic gestation through the vagina the abdomen must be opened at once.

The preliminary vaginal incision will confirm the diagnosis, facilitate the abdominal work by passing clots through the vagina instead of through the abdomen, and establish an efficient avenue for drainage. He claims that the vaginal operation in appropriate cases is attended with less mortality.

As an example of the dangers of vaginal tapping for hæmatocele due to extra-uterine pregnancy, the case reported by Matas¹ is worthy of comment. Blood was drawn from a puncture through the cul-de-sac. Laparotomy was delayed for some time, while the hæmatocele in the meantime continued to increase in size, and finally ruptured into the general peritoneal cavity, where it became encysted. Laparotomy was undertaken to extirpate the sac, and thirteen days later dull pain was noticed in the right hypochondrium, followed by hectic fever, profuse sweating, and increased area of hepatic dulness. A considerable amount of streptococic pus was aspirated from the liver. Finally, free hepaticotomy was performed after resecting the ninth rib, and over a pint of thick pus was evacuated. The patient ultimately recovered.

ECLAMPSIA.

Frequency and Mortality. Pazzi,² in a historical critical study of eclampsia from statistics of 6141 cases collected from about 3000 sources, puts the frequency at 1 in 327 cases of pregnancy. Lindfors and Sundberg,³ taking the statistics of some Swedish hospitals where there were 34,293 deliveries, found a frequency of about 1 in 200. Eskelin⁴ found among 18,132 deliveries a frequency of 1 in 121, or altogether 150 cases of eclampsia, 77 per cent. of which were in primipare. In relation to the time of occurrence, 16 per cent. occurred during pregnancy, 62 per cent. during labor, 22 per cent. during the puerperium. Morawek⁵ reports from Breslau during the last four years 2460 births with 28 cases of eclampsia (1.14 per cent.). The eclampsia appeared 9 times before—13 times during and 6 times after birth. The maternal mor-

¹ Journal of the American Medical Association, April 15, 1899.

² Bologna, Gamberini and Parmeggiani, 1897.

³ Nord. Med. Arkiv, vol. xxx., No. 21: abstract Cent. f. Gyn.; 1898, No. 9.

⁴ Finska Lakaresällskapets Handlingen, 1897, No. 1.

⁵ Inaug. Diss., Breslau, 1898.

tality was 10.77 per cent., the fetal, 14.3 per cent. In Lindfors' 153 cases the mortality of the mothers was 24 per cent.

Etiology and Pathology. The etiology and pathology are so intimately connected that it will simplify matters considerably to take them up under the one head. The pathological picture found post-mortem has been so varied, and has suggested so decidedly different causes for individual cases, that it is scarcely possible to believe eclampsia a single disease. We appreciate, to start with, that the clinical picture is not always the same, but even cases that appear the same clinically frequently show quite different pathological lesions, and it is no doubt probable that in the near future, from the midst of this confusion of pathological findings, several diseases capable of being differentiated ante-mortem as well as post-mortem will be brought forth.

Winkler¹ gives the following findings in nine cases of eclampsia examined at the Breslau Pathological Institute. Beginning with the kidney, he divides the pathological changes into two classes—that in which the kidney shows simply an acute exacerbation of an old, chronic process, and that in which the process is acute. In the first group were found six cases, in the second, three. All varieties of pathological conditions of the kidney were present, but usually what was most marked was an acute glomerulo-nephritis with marked parenchymatous degeneration.

Only once were the severe necrotic changes in the liver found which Schmorl found constantly. These necrotic foci in the liver have had various causes attributed to them. Klebs says they arise by pressure of the strong, muscular contractions of the abdominal wall on the liver during the convulsive attacks. In these cases thrombi are found in the vessels, which lead to hemorrhages and subsequent necrosis. Schmorl says that they are caused by products of decomposition of the placental cells or toxins arising from placental diseases. Winkler says this lesion is not specific to eclampsia, but is found in many other diseases, as, for instance, the different intoxications (phosphorus, arsenic) and numerous infections (cholera, typhus, tuberculosis). The liver-cell emboli found in the heart, lungs, and brain are not unique to eclampsia, but are found in any injury to the liver when necrosis results.

In several cases he found hemorrhagic foci in the brain, due, he believes, to increase of circulatory pressure (apoplexy) or embolism. The finding is by no means constant; therefore it has nothing to do with the cause of the disease. The only lesion that was constant, therefore, was disease of the kidneys.

Prutz² has collected 500 cases of eclampsia from the literature. All

¹ Virchow's Archiv, 1898, Band cliv., Heft 2.

² Deutsche med. Wochenschrift, 1897, No. 40.

those with puerperal infection were excluded. In 368 cases there were only 7 cases of healthy kidneys, and even these showed slight change. Congenital malformations of the urinary apparatus did not exceed the normal frequency of such malformations; dilatation of the ureter was found in only 37 cases, usually on one side. In 213 cases the liver showed changes, usually hemorrhages or necrosis, or hemorrhages with secondary necrosis, and as a cause he suggests capillary toxic thrombi. Rupture of the capsule of the liver and hemorrhage into the peritoneal cavity were found in four cases. He also found emboli in the liver cells and in other organs, but he believes they have no causal significance. The cases of eclampsia with icterus (25 out of 267) could not be separated from the others. As to cerebral changes, hemorrhages were the most frequent, 13 per cent. of autopsies on the brain showing fatal hemorrhages. Oedema and anæmia of the brain were present in 13 per cent.; anæmia alone, or oedema with hyperæmia, in 7 per cent.; oedema alone in 19 per cent. In the lungs there was frequently bronchopneumonia; in the stomach and intestines, hemorrhages into the mucous membrane. In the spleen, pancreas, and suprarenal capsules were thrombi, hemorrhages, and infarcts. He does not believe in the bacterial origin of eclampsia. The chemical examination (ammonia in the blood, increase in the leucocytes, carbonic acid intoxication, toxicity of the urine and of the serum) is still in its infancy. He finally emphasizes the fact that eclampsia must not be considered a disease having always the same etiology and pathology. Two cases, in which careful post-mortems were made by Lindfors and Sundberg,¹ showed, beside the degeneration changes usually found in the kidneys, necrotic and hemorrhagic foci in the spleen and liver. Microscopical examination showed, in one case in the blood of the right heart, numerous emboli of liver cells and a few large, multinuclear cells of syncytial appearance; similar emboli were found in the arteries and capillaries of the lungs. In the second case there were similar findings, but with no syncytial cells. Practically of more importance were the numerous primary thrombi in the small arteries and veins of the lungs, which he believes to have been autochthonous. The hemorrhagic necrotic foci are secondary. Bacteriological examination of the blood and of the uterus showed proteus, bacterium coli, and fluorescent microbes.

Instead of simply examining post-mortem the organs with an obscure etiology, Meiletti² caused convulsions in pregnant animals with toxic substances and studied the lesions. He injected ammonium carbonate, gradually increasing the doses from day to day, until convulsions occurred, followed by coma and death. Chronic intoxication was also produced

¹ *Loc. cit.*

² *Archiv Ital. di Gyn.*, December 31, 1898.

by more gradual injections of the same substance. When the animals died pathological examinations were made of the various organs. The results of the examinations, summed up briefly, establish the following facts :

That profound intoxication by an excess of incomplete urea in the blood causes convulsions of a cortical origin, and even the death of the animals, with parenchymatous degenerative lesions alone, or with grave hemorrhages, depending upon an acute or chronic intoxication. The hemorrhages occur only after convulsion in chronic poisoning, their predisposing cause being a degenerative process in the tissue, near the central vein, and, probably, an alteration of the endothelium of the bloodvessels, due to the prolonged action of the poison in the circulation and an increase of arterial pressure during the convulsion. Further experiments established the fact that unless the ureters were tied an excess of ammonium carbonate did not produce convulsions, the mechanical obstruction and the total elimination of urine being an important factor.

These results would seem to indicate that the hemorrhagic and necrotic foci in different organs, about which so much has lately been written, were secondary to the intoxication, and that the usual clinical and pathological picture could be brought about by this toxæmia ; though—and this point brings us back to the original opinion of clinicians—if the kidney function remains normal this toxæmia does not result.

The idea that the toxæmia of eclampsia is not always due to a single poison is sustained by Burekhardt's¹ report of a case of what he calls pseudo-eclampsia ; it occurred in a primipara, who, after a normal confinement, five days post-partum experienced a chill, followed by a moderate rise of temperature and a convulsive attack resembling an eclamptic paroxysm. These attacks repeated themselves during the next few days with great frequency. There was, however, never absolute loss of consciousness. Albuminous urine was only temporarily present. The patient had also partial paralysis of one side and considerable decubitus. This rather peculiar array of symptoms, together with extensive herpes labialis and slight pulmonary changes, led to the diagnosis of an irregular pneumonia, and the convulsive attacks were thought to be symptoms of intoxication from the pneumonia bacilli circulating in the blood.

Treatment. In view of the fact that toxins of unknown composition are now considered the important cause of eclampsia, the indications for treatment are to prevent, as far as it lies in our power, the formation and accumulation of these really unknown poisons. The importance of activity of the kidneys and of sparing and assisting as much as possible the function of the liver, has been referred to when we discussed the toxæmia of pregnancy (page 323).

¹ Monatschr. f. Geb. u. Gyn., Band vii., Heft 4.

The hygienic management of all pregnant women should always include measures which will facilitate the process of the nutritious exchanges, especially of the nitrogenous substances, in order to put the digestive and urinary systems into the best possible condition for the performance of their functions. Whether eclampsia is an auto-intoxication or is of bacterial origin, there are three indications in the therapeutics: First, to prevent the formation of toxins; second, to favor their elimination; and, third, to combat their action. Oni¹ says: "From a prophylactic aspect, every pregnant woman with albuminuria should be given milk diet—2½ to 3 litres daily. Attention to the bowels must not be forgotten. If prodromes of eclampsia manifest themselves, rest in bed with chloral, 4 to 8 grammes daily. If the disease once breaks out, therapy must be directed against the attacks and against the toxæmia. In order to fight the attacks, chloral and chloroform are selected, notwithstanding the fact that in Germany they give morphine. Chloral is preferably given as a rectal injection. The toxæmia is to be met by two means—milk and subcutaneous injections of physiological salt solution (300 to 400 c.cm.) several times daily. In case of necessity milk is to be introduced into the stomach by the stomach-tube; only in the case of threatening brain or lung œdema is venesection to be done, and then not more than 300 to 400 grammes of blood should be withdrawn. Sweating is not mentioned. The appearance of the disease during pregnancy does not call for premature labor, according to most Frenchmen, since either the attacks subside and the pregnancy goes to term or the labor appears spontaneously. When the latter occurs dilatation of the os is to be hastened and the labor ended. It is not to be forgotten that strong antiseptics (carbolic acid and sublimate) are contraindicated in eclamptic cases."

Meiletti² says that prophylaxis should be hygienic, medical, and obstetrical. For the first we must secure good pulmonary ventilation, and a diet of easily digested, readily oxidized, non-constipating and non-toxic food. Medical prophylaxis will aid by diminishing toxic substances, diluting, neutralizing, or removing the circulating poison, and by assisting and completing the process of organic metamorphosis. Bland purgatives, enteroclysis, and lemonade are useful for these purposes. Serum-therapy is the desideratum of the future. Bleeding should be reserved for treatment of the convulsive attacks, as diaphoretics, hot or vapor baths, are preferable during pregnancy. Milk and chloral are the best diuretics. Saline transfusions in the form of hypodermoclysis and enteroclysis are indicated. All obstetrical measures should be preceded by the therapeutic and hygienic measures just mentioned. If recovery be de-

¹ Abeille Méd., No. 26.

² Loc. cit.

laxed, and there are casts and urobilin in the urine, intervention will be necessary. During the period of dilatation the genu pectoral position may be tried to diminish vesico-ureteral pressure. Expulsion should be aided by means known to conservative obstetrics, nervous excitement being allayed by morphine and chloral, never by chloroform.

Pazzi¹ advises careful hygiene during pregnancy, and at the first prodromal symptoms, milk diet with light venesection (150 to 200 grammes) and chloral (1 to 3 grammes daily) used interchangeably with sodium bromide. When the attack comes on, subcutaneous injections of salt solution (400 to 500 grammes), and again venesection, and finally premature labor. If the attack comes on during labor, chloral, chloroform, venesection (300 to 400 grammes), salt solution (500 to 1000 grammes), and hastening of the birth. If the eclampsia first appears during the puerperium, the treatment is directed against the blood intoxication by blood-letting and injection of salt solution.

The clinical fact that the patient's chance for recovery is greatly improved after delivery has occurred, induces many to believe that the best obstetrical treatment is that which terminates labor at once by a rapid dilatation of the cervix and prompt instrumental or manual delivery. It is the writer's conviction that much harm can follow this teaching. If the obstetrical treatment shall be influenced by the speed with which a patient can be delivered the logical sequence would lead to the performance of Cesarean section as the most rapid means of terminating labor. The mortality of that operation under such circumstances is extremely high. Kettlitz² has collected from the literature twenty-seven cases of Cesarean section in which the indications for the operation were an existing eclampsia. To this number is added a new case operated upon in the Maternity Hospital of Halle. From a study of all these cases Kettlitz concludes that the mortality of Cesarean section, if performed in eclampsia, is very high. This mortality, however, is not due to the operation but to the eclampsia. Eclamptic attacks cease after Cesarean section in about the same proportion of cases as after other methods of delivery. In cases of eclampsia it is at times *impossible* to deliver a child *per vias naturales*. Kettlitz believes that Cesarean section should be restricted to and performed only in this class of cases.

I am convinced that the safest obstetrical treatment of eclampsia is to utilize every available means to eliminate the accumulated toxins by sweating with the hot-pack or bath, and especially by free purgation with Epsom salts, administered either by the mouth in concentrated solution, or, when the patient is comatose, by introduction into the stomach through a stomach tube. The activity of the kidneys, as well as of the skin,

¹ Loc. cit.

² Centralblatt für Gynäkologie, 1898, No. 4.

should be stimulated by the free use of normal salt solution, hypodermoclysis and enteroclysis being used for that purpose. The value of copious rectal injections of normal salt solution, the patient having been placed in the Trendelenburg posture, we have frequently observed. The circulation having been quieted by means of venesection or by veratrum viride, and free catharsis and diaphoresis having been secured, attention may then be turned to the obstetrical treatment of eclampsia, and, so soon as the os is sufficiently dilated to terminate labor without undue violence, delivery, with greater safety to the patient, should and will be accomplished.

This plan of treatment will be found efficient for cases not overwhelmed by the accumulation of toxins. When the latter have produced necrotic changes in vital organs any plan of treatment and the most rapid delivery cannot save the patient.

THE SURGERY OF OBSTETRICS.

Modern aseptic surgery has so enormously widened the field of operative obstetrics that the successful obstetrician of to-day must be a thorough surgeon and a competent gynecologist. Conditions which a few years ago would have brought a sure and speedy death to the patient are now readily treated with comparative safety. Cæsarean section is being performed with almost startling frequency; radical abdominal operations during pregnancy and the puerperal period are not shunned, and minor operations not involving the peritoneal cavity are undertaken without the slightest hesitation.

In reviewing the enormous quantity of material which the accumulated literature of the past year has placed at our disposal, I cannot but feel that a warning note of caution is needed. Operative procedures which are comparatively safe when performed by experienced hands, under the best aseptic conditions that are afforded by our hospitals, lying-in homes, and private institutions of to-day, are, nevertheless, exceedingly dangerous and attended often with frightful mortality when attempted by inexperienced operators, or where ideal aseptic precautions cannot be obtained.

The Value of Posture in Midwifery. Considerable discussion has attached itself lately to the influence of different positions on the size of the pelvis, particularly as to the increase brought about in the inlet and outlet of the pelvis. The question arose to its present importance after its thorough discussion at the late International Congress of Gynecology in Amsterdam.

Dickinson¹ reviews the matter very completely and draws the follow-

¹ American Journal of Obstetrics, June, 1899.

ing practical deductions: 1. Posture will alter the stage of the pelvis in late pregnancy. 2. Increase in available room in the pelvic cavity, as a whole, cannot be brought about. 3. To obtain the longest conjugate at the inlet the hanging dorsal posture is to be employed; the gain is nearly 1 centimetre. 4. To obtain the longest conjugate at the outlet the full-flexed dorsal posture is necessary; the increase promises to be from 1.5 to 2 centimetres.

The terms "hanging dorsal posture" and "full-flexed dorsal posture" are ones proposed by Dickinson¹ for what are described respectively as the Walcher posture—in which the patient is brought to the edge of the bed and her legs are allowed to hang down, the buttocks resting on the bed—and the position used in operations on the back, with the legs well flexed on the abdomen.

The Trendelenburg posture is also available for some obstetric manipulations. I have found it of value in the treatment of prolapse of the cord, and for version, when the presenting part is somewhat fixed in the pelvic inlet. Manipulations to correct the face, brow, and occipito-posterior presentations have been successful when executed while the patient temporarily occupied the Trendelenburg posture, after such manipulations had failed with the patient in the ordinary dorsal posture. It is my practice always to utilize the Walcher posture when delivery is undertaken with axis-traction forceps in cases of lesser degrees of pelvic contraction.

The Induction of Premature Labor. Pelzer's² new method of inducing premature labor by means of glycerin injected between the uterine walls and fetal membranes was found to be very efficient, but also dangerous, as complications from an acute degeneration of the kidneys and destruction of the red blood-corpuscles have followed its employment. Saft describes a new method, for which he claims all the advantages of Pelzer's method without the accompanying dangers. A condom of animal membrane, which must be impervious to water, is introduced through the cervix, and by means of a hollow bougie is distended with pure glycerin. This method is said to be very effective and free from danger. In one case only was a slight albuminuria observed.

Artificial Dilatation of the Os During Labor. M. Demelin³ prefers the bimanual method of Bonnaire to all other methods of dilatation. The index finger of the right hand is first introduced and inserted within the internal os, whose margin it gently presses down by a sort of eccentric massage. The index finger of the left hand is then introduced, and the two together work slowly and gently, causing the cervical sphincter to yield from fatigue rather than from the result of violence. By degrees

¹ American Journal of Obstetrics, December, 1898.

² Deutsche med. Wochenschrift, 1898, No. 3.

³ L'Obstetrique, 1898, No. 50.

the middle finger of the right hand and that of the left, followed by the fourth finger of each hand, may be introduced, and dilatation will then be easily accomplished. The indications for this procedure are: 1. Faulty insertion of the placenta. Out of eleven cases the author had no deaths. 2. Eclampsia. If labor has begun and the cervix is partially dilated, the opening may be enlarged by Bonnaire's method and the uterus emptied. If eclampsia occurs during pregnancy, with no signs of labor, we should first try the usual methods (bleeding, chloral, chloroform, purgatives, etc.). The disease may improve under the treatment, or labor may begin, allowing of bimanual dilatation. Should there be no improvement after ten or twelve hours of treatment it may be well to induce labor by dilatation. 3. Apoplectic coma, asphyxia from cardiac disease, etc. By this method living children may be delivered from a dying mother without the necessity of resorting to Cæsarean section. 4. Fœtal complications. If the fœtus be suffering in utero, Bonnaire's method, by the rapidity of the dilatation which it induces, will increase the chances of life for the infant. 5. Amniotic infection is a decided indication for dilatation and rapid delivery. 6. Faulty and dangerous presentations, as those of the shoulder and forehead, where, if labor has begun, it may be terminated by the bimanual method. This procedure may also be used to dilate the os when symphysiotomy is to be performed. 7. Excessive prolongation of labor in the first stage. Primary and secondary rigidity of the cervix, simple inertia carried to an extreme, uterine inertia in prematurely induced labor, are all indications for dilatation and delivery.

As to the prognosis: Out of forty-nine cases there were two deaths—one of eclampsia and one of cerebral hemorrhage. In conclusion, the author states that the bimanual method is most successful after labor has begun. During pregnancy it may be successful, but the process will be of longer duration and require more care. The internal os is the one to be worked upon, and it is very resistant except in the case of dying patients or where there is faulty insertion of the placenta.

Version. Mueller¹ describes the technique of version in cases of head-presentation when the occiput is directed anteriorly or posteriorly. He bases his study upon a series of seventy versions performed by him, and thinks that with care the operation may be performed as easily as with foot-presentations. In ten cases the head lay with the occiput posteriorly. The foot was reached easily by introducing the hand and wrist through the pelvic brim, while pressure was made with the other hand on the uterine fundus, in order to depress the fœtal limbs. In some cases it is better to introduce the hand with the palm turned away from the fœtal abdomen, in order to catch the foot, the toes being grasped in the

¹ American Journal of Gynecology, 1898, No. 4.

palm of the hand. Mueller reports a case of version in a case of face-presentation in a tertipara, twenty-nine years old, with a contracted pelvis, the distance between the spines being 25 cm., between the crests 27 cm., and the diagonal conjugate 10 cm. With face-presentation the breast and arms of the child are pressed against the uterine wall, while the lower extremities lie near the uterine fundus. In these cases it becomes necessary to pass the hand and arm in front of the child and clear up to the fundus, in order to grasp the feet.

Posterior Positions of the Occiput and Presentation of the Parietal Bone. Mueller¹ concludes an extensive paper on this subject as follows: He distinguishes three posterior positions of the occiput—right, left, and sacral. The two former in most cases end in spontaneous rotation to the front. Occasionally some other presentation develops. It is possible for birth to occur by the forehead pivoting under the pubes and the occiput being forced out over the perineum. It is important to recognize the difference between a presentation of the parietal bone and a posterior rotation of the occiput. Sacral rotation of the occiput is rare. Labor is prolonged in these cases, and laceration of the pelvic floor is inevitable. It is possible, however, in most cases to deliver the patient with forceps, although mother and child will undergo severe pressure during labor. Fortunately, over 96 per cent. of all cases terminate in spontaneous anterior rotation.

Forceps; their Use and Form. Marx,² in discussing the use of the obstetric forceps, states that (1) the forceps should never be used unless there are positive indications for its use. The so-called "Luxus" instrumentation is never an indication. When nature asserts herself as unable to deliver spontaneously, then, and then only, does art come in. Exhaustion on the part of the mother is recognized by changes in temperature and pulse, and on the part of the child by alterations in rapidity, volume, and strength of the fetal pulsations, and a continuous free discharge of meconium in the absence of a breech-presentation. (2) The head must be in normal position, or so relatively normal that operative interference will readily convert it into one. It is always better, however, to convert by manual methods faulty positions before having recourse to instrumental interference, as witness: face case, chin behind. Under these conditions manual flexion of the head is resorted to to convert it into occiput-anterior position, when forceps delivery is accomplished. Face case with the chin in front is considered a normal position; hence direct forceps application. (3) The head must be engaged or at least fixed at the brim.

Colquhoun³ considers the various forms of axis-traction forceps now in

¹ Monatschr. f. Geburtsh. u. Gyn., 1898, Band vii., Heft 5.

² Medical Record, April, 1899.

³ Lancet, November 12, 1898.

use. A pair of forceps is said to act in three ways: (1) As a retractor, (2) as a lever, and (3) as a compressor. An axis-traction forceps should combine these three properties, with that of confining traction at each point to the direction of the pelvic axis. In addition to these properties attempts are now made to provide for free movement of the fetal head in flexion, extension, and rotation, and it is also demanded that the forceps should act as a guide to the fetus and as an indicator of the direction of traction. Forceps that are best suited for axis-traction, having a full pelvic curve, are unsuited for rotation, and, if they rotate, they are no longer axis-traction forceps. Colquhoun is convinced that while it is a benefit to use the axis-traction rods, the rigidity of the instrument and its simplicity should be as little interfered with as possible.

Pelvimetry. In the consideration of an obstetric operation for the delivery of a living child the vital importance of an accurate knowledge of the exact pelvic measurements cannot be overestimated. There can be no doubt that far too little attention has been paid to pelvimetry in time past, and that the general opinion that American women are only occasionally affected with pelvic deformity is erroneous.

J. Whitridge Williams¹ has made a careful analysis of the pelvic measurements obtained from the examination of 1000 women in the maternity service at the Johns Hopkins Hospital. This is the most valuable scientific work of its kind that has yet been done in America. The conclusions arrived at in Williams' paper are as follows:

1. In our material the frequency of contracted pelves (13.1 per cent.) corresponds very closely with the general average of frequency observed in Germany.

2. This is due, in large part, to the presence of a large black population in Baltimore, 469 out of our 1000 cases being colored women.

3. Contracted pelves are 2.77 times more frequent in black than in white women, and occur in 19.83 per cent. of the former and 7.14 per cent. of the latter.

4. The statistics of Reynolds, Crossen and myself indicate that contracted pelves are observed in about 7 per cent. of the white women of this country, or about once in every fourteenth case.

5. Contracted pelves accordingly occur, in our white women, about as frequently as in many German clinics, notably Rostock, Breslau, and Basle.

6. And occur quite as frequently as in Paris (Pinard and Budin) and more frequently than in Vienna.

7. As every fourteenth white and every fifth colored woman possesses a contracted pelvis, the necessity for routine pelvimetry becomes apparent.

The accompanying interesting table gives the percentages of deformity:

¹ Obstetrics, May, 1899.

Variety of Pelvis.	Number in 1000 cases.	Number in 231 whites.	Number in 469 blacks.	Per cent. in 1000 cases.	Per cent. in 231 whites.	Per cent. in 469 blacks.
Generally contracted	79	14	62	7.9	2.63	13.86
Simple flat	22	16	9	2.2	3.01	1.91
Rhachitic	20	3	17	2.0	0.26	3.63
Rarer forms	7	2	2	0.7	0.94	0.42
Total	128	35	90	13.1	7.14	19.83

Symphysiotomy. Under the title of "The Symphysiotomies One Does Not Do," Queirel¹ describes seventeen cases of labor in women having pelves deformed to some extent, in which at some time during labor it seemed probable that delivery by symphysiotomy would be necessary. In each of these cases, however, the patient was safely delivered either by spontaneous birth or by a comparatively easy application of the forceps.

Lusk has well said of symphysiotomy, that "Its worst enemies are those who preach its simplicity and who ignore the risk involved in its employment. The avoidance of hemorrhage and laceration calls for constant vigilance, and the after-treatment involves an infinite amount of painstaking."

Bettino Pozzoli,² in the course of a long article upon this subject, says that the operation is neither easy nor rapid of performance. In order that it should give the best results it should never be undertaken as an operation of urgency. The scrupulous antisepsis which it requires necessitates preparations as long and as minute as in the case of Cæsarean section. Neither can we always foresee what unexpected developments may occur to prolong the procedure. Olshausen reports a case in which, after having partly cut through the symphysis, he came up against bone which had to be sawn through in the most laborious manner. There may have been ossification, or, more likely, considerable obliquity of the symphysis, or an abnormal position associated with uncommon smallness of the articular cartilages. In the examination of 200 female cadavers Queirel found a deviation of the symphysis to the right, and more frequently to the left in many cases, but did not discover any cases of ossification. However that may be, the condition is liable to complicate the operation and to endanger the life of the fœtus.

Symphysiotomy should be undertaken only when the fœtus is alive, and its vitality should in no wise be endangered. Another contraindication to symphysiotomy is beginning septicæmia. In this connection Pinard says: "I believe that in the case of a patient who is otherwise a proper subject for the operation, if the uterus be infected, it is better to perform gastro-hysterectomy, followed by total hysterectomy, rather

¹ *Annales de Gyn.*, February, 1898.

² *Ibid.*, January, 1898.

than to undertake the temporary enlargement of the pelvis." As a rule, also, primiparæ should not be subjected to symphysiotomy, on account of the greater resistance of the tissues and the consequent danger of laceration and hemorrhage. A first labor, says Mullerheim, should in one sense be an experiment. When the uterus has once or twice proved itself insufficient to the overcoming of the obstacle to birth, the fetuses becoming larger with each successive pregnancy, we can feel a greater certainty of the necessity for interference.

Mullerheim adds that another contraindication to symphysiotomy consists in any sort of laborious vocation followed by the patient, as in that case she will usually prefer the preservation of the power to work to the life of the child.

As to the difficulties of the operation, the author, while granting that an intelligent practitioner can overcome them, believes that just as Cæsarean section is not resorted to habitually in private practice, so symphysiotomy should be reserved for cases which can be performed in hospitals where are found all the conditions necessary to secure the best results. Within proper limits the operation is of value, and may save the lives of infants which would not have survived the application of the forceps or version, and it is unattended by grave danger to the mother.

Carr¹ reports two cases and discusses the technique of the operation and the complications to be avoided. As a result of his work, he comes to the following conclusions, and he also presents the side of those who advocate the use of silver wire for suturing the severed bone :

"From my own observation and that of others, I think I may safely say that the most objectionable features of the operation are the difficulty and discomfort of keeping the bones in apposition by the methods in vogue, and the consequent danger of pinching the urethra or bladder, the danger of hemorrhage, and the danger of infection in a wound so close to the vulva and urinary meatus. I believe, however, that by careful attention to technical details all these objectionable features may be overcome.

"The ordinary rules of asepsis and antisepsis must, of course, be rigidly observed, and in addition I have the following three suggestions to make :

"1. The incision need not extend as low as it is usually made. The lower angle of the wound may be pulled down with a retractor, after the incision has been made down to the bone, and sufficient room thus gained to complete the operation safely without extending the skin wound nearer than two inches to the urinary meatus. This I believe to be an important detail, as it greatly lessens the chances of infection.

¹ American Journal of Obstetrics, 1898.

"2. The bone should be carefully and thoroughly separated from the tissues behind and below, great care being taken to keep next to the periosteum. It is also important that this separation extend from three-fourths of an inch to one inch on each side of the median line, to insure the safety of bloodvessels and urethra when the bones are separated. Several large anterior vesical veins and veins from the clitoris lie embedded in the fat and loose connective tissue between the anterior wall of the bladder and urethra and the posterior and inferior surface of the pubic arch; but these vessels are safe and the urethra is safe if freeing of the bone be carefully done. After the bones are freed all around the joint may be divided with a Galbati knife, or preferably with an ordinary scalpel, if the precaution be taken of first passing a grooved guard behind the line of incision, as recommended by Farabeuf, Lusk, and others. The articular surfaces are not plane surfaces. Irregular rounded projections of bone, except in very young subjects, will frequently be found passing across the median line from one side or the other and fitting into corresponding concavities of the opposite bone, with only a thin layer of cartilage between. This makes the line of incision irregular, and the irregularities can be better followed with a thin, sharp-pointed knife. If a thick knife be used these bony projections must be cut through forcibly.

"3. I would recommend wiring the bones. I can conceive of no possible valid objection to uniting them firmly with stout silver wire, and believe that this will very materially shorten the time necessary for firm union, that it will insure firm union, and that it will add immensely to the comfort of the patient subsequent to operation. I am aware that necrosis and suppuration have been attributed to the use of silver wire in this manner, but I freely confess that I do not believe such troubles can be justly attributed to the wire or the wiring. They could have been due to nothing but infection, and should infection of the wound occur it would be an easy matter to remove the wire. Farabeuf, Pinaud, and Caruso recommend silk sutures through the tough ligamentous tissue anterior to the pubes. Such silk sutures are worse than useless. When the strain of separation comes upon them they will tear through the tough tissues like hot wire through butter; and silk ligatures are vastly more irritating and vastly more apt to become infected than silver wire.

"It has been pretty thoroughly and conclusively proved by Kelly and Halsted and many others, among whom might be included Marion Sims, that silver wire is the least irritating of all sutures; that it rarely, if ever, has to be removed on account of suppuration; that, on the contrary, it strongly tends to prevent infection. Silver sutures may be put through the bones almost as easily and quickly as silk through the ligaments. Bone is the only tissue in which ligatures subjected to such a strain will

hold, and two stout silver wires will stand the strain and maintain perfect apposition. Lusk says: 'The weak side of symphysiotomy is the imperfection of all methods thus far devised to secure coaptation of the parted surfaces after the operation.' I believe that the weak side may be made strong, and that we are entirely wrong in blaming silver wire with bad results due to infection and other causes. The safest of all material to bury is silver wire, and the safest material to bury it in is bone."

The employment of a firm binder and appliances to maintain coaptation of the symphysis during convalescence, such as the hammock of Ayres, or the use of sand-bags placed to either side of the patient under the mattress, to make a trough in which the patient rests, are means generally successful. The writer prefers such means to buried sutures.

Lepage¹ reports a series of eight cases which illustrate fairly well the legitimate field for the operation of symphysiotomy. In all of these cases the degree of contraction was not a pronounced one, and the cases came within the recognized limit of the operation.

In his first case the child was lost through birth-pressure, the mother making a good recovery. The patient had broken her right thigh when a child, and the pelvis had suffered in consequence. The child perished from pressure upon the cord and pressure during extraction.

His second patient had lost two children by forceps extraction. In the present labor the symphysis was easily opened, the head rotated by Farabeuf's lever, and delivery was spontaneous.

His third case was a face-presentation in a woman who had been pregnant eight times, and had lost several children by the use of forceps. After symphysiotomy the chin rotated under the pubes and the child was expelled.

In Case 4 fruitless applications had already been made with forceps before the patient came to the hospital. After symphysiotomy the head was rotated by the lever and a living child delivered. The mother suffered from incontinence of urine for some time, and was threatened with phlebitis.

In Case 5 the mother had intestinal disorder and pain in one leg after the operation, but mother and child made a good recovery.

In Case 6 the forceps and lever failed to extract the child, and symphysiotomy was finally successful. The child, however, perished. A fracture of the skull was found upon autopsy.

The seventh operation was done upon a woman on whom symphysiotomy had been performed in previous labor. Some difficulty was found in opening the scar-tissue left by the first operation.

¹ Annales de Gynecologie, March, 1899.

The eighth operation was done upon a patient who had a normal pelvis, but a very large child. Both made a good recovery.

In the April number of the same journal Pinaud reports seven symphysiotomies during the past year. There were 97 patients during this time in whom abnormality of the pelvis was recognized. Of these 77 had spontaneous births. Craniotomy was done upon 6, and abdominal section upon 3; the forceps was used three times, and symphysiotomy was done upon 7. These cases resemble the preceding. The forceps was used in tentative traction, and this failing the symphysis was opened. Version was employed in some cases. In several, lacerations of the vaginal wall occurred, which were immediately closed by catgut stitches. Six of the patients had rachitic pelvis; one an obliquely contracted pelvis. Two were primiparæ, five multiparæ, and one of these had the operation the second time. In three, labor was ended by forceps, in four by version. Six women and all the children recovered. One woman died.

The patient who died was a primipara who had albuminuria. The wound was found united apparently, but on further study was discovered to be infected. In the peritoneum were found pure cultures of the colon bacillus. In the symphysis were streptococci, staphylococci, and colon bacilli, and in the uterus the same germs were present.

Cæsarean Section. Until within comparatively recent years the operation of Cæsarean section was attended with such high mortality on the part of the mother that it was almost never attempted; but modern aseptic surgery has so changed this, when the operation can be performed deliberately and among proper surroundings, that its mortality in skilled hands should not exceed that for simple fibroid tumor. Nevertheless, when ideal aseptic precautions cannot be obtained, and when the operation must be performed in emergency by operators not skilled in abdominal surgery, and particularly with the operation of Cæsarean section itself, the mortality will always continue so high that the operation should be approached with great hesitation. The radical tendency which has recently been manifest by articles on this subject from men high in the profession I cannot but regret, and I see in them a dangerous teaching which will be exceedingly apt to lead to unhappy results.

Among the recent articles upon this subject the most important is that of Leopold and Haake,¹ based on 100 cases of Cæsarean section. A fact which adds much to the importance of this paper is that Leopold has had an unrivalled experience in the various forms of this operation and of its alternatives. The total of 100 operations were performed in a little more than fourteen years, the most of them at the Royal Hospital

¹ *Archiv für Gynäk.*, vol. lvi., part 1.

for Women, at Dresden. The operations are divided into two classes : (1) Conservative Cæsarean section, 71 ; (2) mutilating or Porro operations, 29.

The 100 Cæsarean operations performed at Dresden correspond to 22,358 confinements, which is a proportion of about 1 to 225. Analyzed, the figures give for the conservative operation the proportion of 1 to 319, and for Porro's operation 1 to 771.

One point which is worthy of notice is that the first series of operations extended over nine years, whereas the second series of fifty were performed in the course of five years. Leopold is decidedly of opinion that there may be relative indications for the operation which save us the painful necessity of perforating the head of a living child. But the conditions under which the operation may be done must include the means of obtaining the most rigorous asepsis. Hence, he thinks that the operation should not be performed except in a properly equipped institution.

INDICATIONS FOR CÆSAREAN OPERATION IN CASES OF CONTRACTED PELVIS. The indication is either absolute or relative.

1. *Absolute Indication.* At the Dresden Women's Hospital the absolute indication for the Cæsarean operation is a true conjugate of less than 6 cm. Zweifel considers a true conjugate of 6 cm. an absolute indication. Yet, though the term absolute is used, there is really little absolute in practice, as the operation may be as surely indicated with a true conjugate of 6.5 cm. and a large fœtus. An examination of the cases also shows that among the indications, besides the length of the true conjugate, were tumors obstructing the genital canal, osteomalacic deformities, rupture of the uterus, etc.

2. *Relative Indications.* It is difficult to state in an exact numerical form the superior limit of relative indication for the Cæsarean operation. We have to consider other possible proceedings, among which is version followed by immediate extraction. At the Dresden Hospital it has been decided, on account of the good results obtained, to fix on a true conjugate of 7 cm. as the inferior limit for version, followed by immediate extraction. This only applies to flattened rhachitic pelves. In flat rhachitic and generally contracted pelves the inferior limit is 7.5 cm. Hence, in contracted pelves the limits of relative indication, if the measurement of the true conjugate alone were considered, would vary between 5 cm. and 7.5 cm. But here, still more perhaps than in the estimation of the absolute indication, the decision of the surgeon ought not to depend upon a fraction of a centimetre. Other circumstances, such as the size of the fœtus, for example, ought to be taken into consideration.

Of the 100 operations, 93 were performed upon women with con-

tracted pelves. According to the type and form of the pelvis, the cases are subdivided as follows: (1) 7 generally contracted; (2) 11 flat, rachitic; (3) 65 flat, rachitic, and generally contracted; (4) 2 flat, rachitic, and obliquely contracted; (5) 4 kyphotic and generally contracted; (6) 2 generally and obliquely contracted; (7) 1 osteomalacic; (8) 1 generally contracted, pseudo-osteomalacic.

According to the degree of contraction, the pelves may be divided into three groups:

1. With a true conjugate of from 8.5 to 7, 39.
2. With a true conjugate of from 7 to 6, 35.
3. Contraction of absolute indication, 19.

INDICATIONS FOR PORRO'S OPERATION. The author's remark, to begin with, is that it is impossible to lay down systematic rules which the operator must blindly follow. It is necessary to weigh the facts of each individual case. It may be set down as a general rule, however, that Porro's operation should be done when certain conditions essential to the successful application of the conservative method are not fulfilled in any given case. The conditions are: (1) That the woman in labor has energetic contractions of the uterus; (2) that her general health has not been enfeebled by any serious malady; (3) that it is certain that the patient has not become infected by the time of the operation. It is important, also, that there should be no elevation of the temperature or marked acceleration of the pulse. It is also extremely desirable that the membranes remain intact till the beginning of the operation, or at least until only a short time before the operation. It is of the first importance that the patient has been subjected to but few examinations, and these only by persons beyond suspicion of conveying infection. Moreover, it cannot be too strongly stated that the conservative operation must not be performed upon a woman who is the subject of gonorrhœal infection, whether acute or latent. This disease produces such unfavorable results in the puerperium that it is imperatively necessary to ascertain, in every case for operation, whether or not it exists, and in order to do so an examination must be made not only of the urethrovaginal secretions but also of those of the cervix uteri. When positive proof of its presence has been obtained, it is better to resort to Porro's operation or even to perforation.

Keeping these general indications in view, Porro's operation was resorted to in the following classes of cases: (1) In four, because the patient was already infected; (2) in nine, because it was resolved to induce sterility by reason of considerable contraction of the pelvis in patients of dwarfish stature with rachitic deformities; (3) in two cases of considerable contraction with grave constitutional anemia; in two others, because of serious cardiac lesions without compensation; in one

case the contraindication to the conservative operation was a nephritis which would have rendered the patient more liable to secondary hemorrhage and to infection ; (4) in five cases it was necessary to abandon the conservative operation in favor of Porro's, on account of atony of the uterus ; in these cases it was not only the fear of bleeding which led to the adoption of utero-ovarian amputation, but the clinical experience that women who have lost much blood are more liable than others to thromboses, embolism, and especially to septic processes ; (5) in four cases on account of tumors of the uterus or of the ovary, three of which tumors were malignant ; (6) in one case of osteomalacia, in one case pseudo-osteomalacia, in one case complete hernia of the uterus, with considerable relaxation of the abdominal walls and of the ligaments ; (7) in two cases complete rupture of the uterus.

Among the patients, whose ages range from nineteen to forty-nine, there were forty primiparæ and sixty multiparæ. The number of multiparæ is remarkably large, and the explanation of the adoption of the Cæsarean operation is of much interest. Of the sixty multiparæ, fifty-five were subjected to the operation on account of pelvic contractions. These fifty-five multiparæ had before the Cæsarean section a total of 108 labors. These labors may be grouped according to their method of termination in the following way :

1. Spontaneous completion at term, 15 ; children living, 15 ; dead, 5.
2. Premature labor, 7 ; children living, 2 ; dead, 5.
3. Abortions, 9 ; dead, 9.
4. Requiring operation, 77 ; children living, 25 ; dead, 42.

The result of the 108 pregnancies gave thus a total of 37 living children. But attention is called to the fact that out of 25 children born alive after operative interference, 14 owed their lives to Cæsarean section alone, while the other operations—version with extraction, forceps, etc.—saved only 11 children out of 67, giving a foetal mortality of 83.6 per cent.

In the 100 cases Cæsarean section had been performed more than once on 13 of the patients—four times on one, three times on another, twice on eleven.

METHOD OF OPERATION AND ASSISTANTS. Under this head the authors touch only on some points in the method of operation, which are still under discussion.

1. *The Employment of the Elastic Band.* At Dresden the elastic band around the neck of the uterus is employed in most cases as a means of preventing hemorrhage. If it is not put on too tightly and is not permitted to remain long in position, its use is not accompanied by any drawbacks. Leopold himself always uses the elastic band, so as to familiarize his students with it, because they (the future practitioners)

may have to perform the operation under difficulties which are unknown to the staff of a well-appointed hospital. With the assistance available in the hospital the hemorrhage could be controlled and the suturing of the uterus carefully completed under digital compression alone.

2. *Suture Material.* Silk sutures were generally employed, and quite successfully. In only one case in the last series of fifty was a sinus produced by the sutures, followed by extrusion of the thread after sup-puration.

3. *Method of Suturing.* From twelve to fifteen deep sutures are introduced. The thread is introduced about one-third of an inch from the margin of the peritoneum, and it is passed in a curve, so as to include a portion of the muscular tissue, and emerge just at the border of the internal wound. The superficial sutures are usually 13 to 17. They seize only the peritoneum and a superficial layer of muscular tissue.

4. *Precaution Against Hemorrhage.* Hypodermatic injections of ergotin are used. One is given before the anæsthetic is administered, and a second just when the patient is put upon the operating-table.

5. *Assistants.* Three at least are required—one to administer the anæsthetic, who should be experienced at his work, as regular anæsthesia is essential to success; an operating assistant, who should be familiar with all the details of the operation; and it is well to have a third, to attend to the child if it should be asphyxiated when extracted.

MATERNAL MORTALITY. There were ten deaths among the 100 women operated upon, making a mortality of exactly 10 per cent.

There were seven fatal results among the seventy-one cases of conservative Cæsarean section, equal to a mortality of 9.8 per cent., and three among the cases of Porro's operation—that is, a mortality of 10.3 per cent., so that the mortality from the two forms of operation were almost exactly equal. It is satisfactory to learn, in reference to the mortality, that there is no selecting of cases with a view to obtaining good "statistics." The operation was undertaken in the most serious and complicated cases, with the single object of saving the lives of the patients and the children. The gross mortality of 9.8 per cent. for the conservative operation would fall to 5.8 per cent. if three cases were excluded in which the death was due to other causes than the operative proceedings. One death was owing to infection before operation, another to œdema of the lungs produced by the anæsthetic, and the third to gonorrhœal infection in a rather acute stage. Why the conservative operation was performed in two of these cases, contrary to the rules laid down in a previous part of the report, is not very clear.

Two of the patients who underwent Porro's operation died from causes not attributable to the operation. One was in a cachectic condition, owing to medullary sarcoma of the right ovary, and one was oper-

ated upon when half-moribund from disease of the heart, with general anasarca and albuminuria. If all these cases be eliminated, the mortality of the operation upon tolerably healthy women falls to 5.2 per cent.

FETAL MORTALITY. All the children extracted by the conservative operation were alive—that is, 71, or 100 per cent. Looking at the operation purely from the stand-point of obstetrics, it hardly concerns us to know how many of the children died before the mothers left the hospital, and how many of them were the victims of intestinal catarrh or bad nursing.

Owing to the facts of the Porro operations, only twenty-five have to be considered in reference to fetal mortality. Two of the children were lost during the operation, giving a mortality of 8 per cent.

THE PUERPERIUM. In fifty-one cases the condition after operation was absolutely apyretic, the temperature never rising above 100° F. In thirteen cases there were slight elevations of temperature beyond 100°, which is considered not abnormal. In thirteen cases a certain amount of fever due to septic processes was observed.

In several others more serious conditions were observed. In four there was thrombosis; in five rather serious bronchitis. In addition to these there was one case of each of the following complications: mastitis, nephritis, cystitis, eclampsia, gonorrhœal arthritis, and psychosis.

In concluding, the authors proceed to compare the results of symphysiotomy as obtained by Morisani, Zweifel, Pinard and others with the results of the Cæsarean section, and it must be admitted that both the gross and the “analyzed” mortality come out somewhat in favor of the Cæsarean operation.

INCISION OF THE FUNDUS IN CÆSAREAN SECTION. Fritsch suggested in May, 1897, that in doing Cæsarean section the uterine incision should be made at the fundus instead of in the anterior wall of the uterus, and that it should run transversely from tube to tube instead of longitudinally. Several cases have recently been operated upon in this manner, and although there is the usual difference of opinion, some operators have expressed themselves as highly satisfied with Fritsch's *modus operandi*. The advantages claimed appear to be easy extraction of the child; reduction of hemorrhage to a minimum, as the wound runs parallel to the main vessels; good control of bleeding after suture, as the stitches are passed at right angles to the main vessels; reduced risk of subsequent hernia, as the abdominal wound can be made higher up in the abdominal wall than would otherwise be possible; and, lastly, easy prevention of the entrance of blood and liquor amnii into the abdominal cavity. Müller¹ says that for a number of years he has incised the

¹ Centralblatt für Gynäkologie, March 5, 1898.

uterus at the fundus, instead of in the anterior wall; but unlike Fritsch, he continues to make a sagittal wound, half in the anterior and half in the posterior uterine wall. He does this mainly in order to make sure of leaving unwounded the thin lower uterine segment, and while recommending the fundal incision, he thinks it does not matter whether it is longitudinal or transverse.

Among the many reports of successful operations by this method, Riedinger,¹ of the Brunn clinic, publishes the following:

He reports four operations. In one the upper half of the uterus was adherent to the peritoneum, which had undergone a chronic degenerative change. After recovery the adhesions recurred, and the uterus remained high in the abdomen, producing an undesired ventro-fixation of the womb.

In another case the membranes were adherent, and in removing them the right cornu of the uterus was torn, the bleeding ceasing readily on digital compression and catgut suture.

His operations were successful, and add to the accumulating evidence in favor of this method.

Clemen² reports a conservative Cesarean section with transverse incision of the fundus after Fritsch, and is very enthusiastic over the advantages of this method. The hemorrhage was trifling and stopped entirely after the emptying of the uterus, although there was no compression of the cervix by either hand or elastic tube. The feet of the child, which presented by the vertex, were seized and extracted with surprising ease. The rapidity with which the uterine wound contracted and became smaller was astonishing, and Clemenz experienced no difficulty in closing the wound.

Schröder³ publishes four new cases operated upon after Fritsch's method in the University Clinic in Bonn, which further illustrate the advantages of this modification. The ease with which the child could be delivered was astonishing. In one case the child slid out of the uterus by its own gravity, the operation being performed with pelvic elevation. The uterus contracted rapidly, and hemorrhage stopped immediately after placing a ligature at each angle of the wound.

PORRO OPERATION *versus* CONSERVATIVE CÆSAREAN SECTION. Since the improvement in the technique of hysterectomy has reduced the mortality of that operation many operators are coming to prefer the Porro operation to the conservative Cesarean section, basing their choice on the facts that the former can be done more quickly; that it diminishes the risk to the patient by forestalling the occurrence of post-partum hemorrhage, and lessening the chance of puerperal infection.

¹ Centralblatt für Gynäkologie, 1898, No. 29.

² Ibid., 1898, No. 10.

³ Monatsch. f. Geb. und Gynäk., Band vii., Heft 2.

Beside these immediate advantages the ultimate dangers of repeated Cæsarean section, of rupture of the scar in the uterus, or of adhesions of the uterus to the abdominal wall, are all avoided. Boldt¹ urges the claims of total hysterectomy as superior to supravaginal amputation, with extraperitoneal treatment of the stump. The latter operation, however, is generally thought to be safer and to have less technical difficulties. He claims that the advantages of total hysterectomy are : 1. Less danger of infection. 2. Practically no danger of secondary hemorrhage. 3. Less danger of intestinal obstruction. 4. Shorter convalescence. 5. Less liability to ventral hernia. It should be employed : 1. In pregnant women carrying living children, but in whom delivery cannot be effected by the natural channel. 2. When the uterus has become infected by the presence of a dead child. 3. In cases of rupture of the uterus when the condition of that organ makes it unsafe to close the uterine wound.

J. H. Carstens² suggests the following rules for cases demanding Cæsarean section : 1. If operated upon in private houses, with facilities and by experienced surgeons, the Porro operation should be employed, using the clamp method. 2. Cases of deformed pelvis which may require a similar operation in the future should be subjected to the Porro operation, even if in a well-equipped hospital, unless the patient decides otherwise. 3. Cases requiring abdominal section, on account of removable tumors only, should be treated by Cæsarean section if the operation can be performed in a hospital or in a private house where proper facilities can be obtained. 4. Cæsarean section should also be performed in any case when desired by the patient.

INDICATIONS FOR CÆSAREAN SECTION. As examples of the various conditions which are encountered requiring Cæsarean section, of the complications that may arise and their treatment, I quote abstracts of a few cases which have appeared in the literature during the past year.

Braun-Fernwald³ records a case of repeated Cæsarean section in a woman suffering from a high degree of spondylolisthesis. The first operation preceded the second by two years. The pelvic measurements then were : Between the spines, 26 cm. ; between the crests, 30 cm. ; between the trochanters, 25.5 cm. ; external conjugate, 18.25 cm. ; true conjugate, 6.5 cm. ; circumference of the pelvis, 77 cm. The first pregnancy was terminated by version and extraction, the child being dead. The second pregnancy was terminated artificially, forceps being applied to the impacted vertex, and the child perishing. The third pregnancy ended spontaneously in the eighth lunar month (macerated

¹ Transactions American Gynecological Society, Boston, May, 1898.

² Journal American Medical Association, December 4, 1898.

³ Centralblatt für Gynäkologie, May 14, 1898.

fœtus). The fourth pregnancy ended in abortion. At the end of the fifth pregnancy conservative Cæsarean section was performed. In August, 1897, the woman appeared again in the third month of her pregnancy, which was expected to terminate on February 16, 1898, and Cæsarean section was again performed one month in advance—January 7, 1898. The child, which weighed 2050 grammes and was 42 cm. long, was asphyxiated, but was resuscitated, only to die the following day. A Porro operation was performed, the patient making a good recovery.

Solowij¹ reports a case of conservative Cæsarean section with castration for osteomalacia. The patient was thirty-seven years of age and an operator in a cigar factory. She had menstruated regularly since her seventeenth year, had been married fifteen years, and had given birth to eight children. Toward the end of the eighth pregnancy she commenced to suffer from pain in the bones. After a prolonged lying-in she slowly returned to a condition of health. In the seventh month of the succeeding pregnancy pains in the bones again recurred, especially marked in the legs, which confined her to bed. The administration of phosphorus did not bring relief. The woman was now markedly emaciated, with an olive-colored skin and a normal body temperature. Abdominal palpation detected weak and infrequent uterine contractions. The fœtus lay in the second position of the vertex; the fetal heart-sounds could be heard on the right side. The distance between the iliac spines measured 22.5 cm.; between the crests, 26.5; between the trochanters, 27; and the external conjugate, 19. The transverse diameter of the outlet was 4 cm. The symphysis was very movable. Abdominal section was performed and the child extracted through the uterine incision. The uterus contracted well. The ovaries were removed. The fœtus was a living girl, weighing 2750 grammes. There were no ill results, and the incision in the abdomen closed by first intention.

Braithwaite² reports two Cæsarean sections performed because the pelvis was blocked by ovarian tumors, so that delivery was impossible. A pair of strong scissors was used to divide the uterine wall after it had been opened sufficiently by a scalpel to allow of this operation. This plan is preferable to the entire use of the scalpel and director, as the uterus is more rapidly opened and the operator is less likely to injure the child. In one case the wound in the uterine wall was closed by silk-worm-gut sutures placed deeply at half-inch intervals. These just missed the internal surface of the uterus. It is believed to be an improvement in the technique to close the upper end of the uterine

¹ *Centralblatt für Gynäkologie*, June 28, 1898.

² *Lancet*, December 31, 1898.

incision last, and just before putting in the last two sutures to syringe the uterus well out into the vagina, to insure its freedom from clots. Either silk or catgut is preferable to silkworm-gut for closing the incision in the uterine wall. A certain amount of irritation will be produced by the unabsorbable silkworm-gut.

Jardine¹ reports four cases of Cesarean section, in one of which the patient had a septic vaginitis, and albumin, pus, and casts were present in the urine at the time of operation. The true conjugate was found to be only one and five-eighths inches. The patient died of sepsis four days after the operation. On microscopical examination of the exudation from the peritoneal cavity the bacillus coli communis was found. In another case, a quartipara, aged twenty-seven, died from suppression of urine on the sixth day. A careful post-mortem examination showed nothing in the kidney to account for the suppression. Jardine believes that in making the uterine incision in Cesarean section the Cameron method of pressing a slightly curved pessary firmly on the uterus and cutting inside of it is best. An elastic ligature, in his opinion, does more harm than good. He prefers the longitudinal incision, beginning at the fundus and extending downward for about four inches, and he uses silk for suture material. Catgut will last long enough, but the difficulty is in rendering it thoroughly aseptic.

Washburn² reports two Cesarean operations done in the homes of the patients. Both were successful. The houses were country tenements, and very limited conveniences for operation were at hand.

In the first case the true conjugate was a little over three inches, the patient had been in labor twenty-four hours, was thirty-eight years old, and this was her first pregnancy. The placenta and membranes were torn off rapidly, the uterus washed out with hot lysol solution, the washing being done through the cervix and vagina, and a strip of iodoform gauze was packed through the uterus and down into the vagina. The muscular portion of the uterus was sewed with No. 3 catgut, the stitches being placed about an inch apart. The serous layer was closed with continuous suture of small catgut. The abdomen was closed as usual and the usual dressing applied. Some portions of the membrane were left in the uterus, and an intra-uterine douche was given, which brought them away. The child weighed eleven pounds, and the patient was up and about in five weeks, and three months later was perfectly well. She got out of bed several times during the first ten days when the nurse was absent from the room.

In the second case high forceps had been tried unsuccessfully. The same method of procedure was followed, with a very good result.

¹ Scottish Medical Journal, November, 1898.

² Boston Medical and Surgical Journal, June 2, 1898.

Pregnancy and Fibroid Tumors. H. C. Coe¹ points out, in criticising a recent text-book, the diversity of views on the question: "With tumors above the internal os, from 70 to 80 per cent. of the patients may be expected to go on to term." "When a woman with a myomatous uterus conceives it is certain that her life is in jeopardy, not only so long as the fetus remains within it, but also when it is expelled, whether this occurs prematurely or at full term." (Bland Sutton). "From the stand-point of the general practitioner," says Dr. Coe, "whose laudable desire is to avoid operative interference wherever it is compatible with the safety of the patient, it is desirable that a few facts should crystallize out of the mass of conflicting evidence." Some of the points brought out by the author are noted below. Pregnancy in fibroid uteri is not so rare as we suppose, both subserous and interstitial myomata being frequently found in pregnant women if sought for. Such tumors enlarge rapidly under the influence of the increased uterine blood-supply of pregnancy. This enlargement is not always permanent, but it may cause serious pressure-symptoms. These, with changes in position of the tumor and uterus, and torsion of pedunculated fibroids, may cause hemorrhage, cystic degeneration, and even necrosis. The site of the growth is the most important clinical point to be considered in estimating the probability of these occurrences. So much for the effect of pregnancy on the tumors. As to the effects of fibroids on pregnancy, subserous ones usually prevent conception or cause abortion, the latter being attended by unusual hemorrhage. Other fibroids may cause impaction of the growing uterus in the pelvis, or may lift it safely above the brim, according to their position. Large interstitial growths often conduce to early detachment of the placenta, and are thus a cause of "accidental hemorrhage." The presence of a fibroid renders imperfect both contraction and retraction of the uterus, favoring both retention of the placenta and post-partum hemorrhage.

The author calls attention to the fallacious view that fibroids disappear after pregnancy. While they may doubtless undergo notable diminution during involution, "one would hardly recommend pregnancy as a cure for fibroids."

The difficulty of diagnosis in cases of pregnancy complicated by myomata is next mentioned, and it is pointed out that if there is any doubt examination under anæsthesia is not only advisable but obligatory.

The necessity for surgical treatment of fibroid tumors complicating pregnancy can only be arrived at by a careful study to learn the exact location of the tumor or tumors, and thus predict the probability or certainty of their interference with labor or the puerperal period.

Fibroids situated in the upper segment of the uterus will not prove

¹ Medical News, June, 1898.

an obstacle to labor, yet they may otherwise seriously complicate pregnancy and labor. When the tumor is impacted in the pelvis it is true that the uterine contractions at labor may draw the tumor out of the way, but that fortunate occurrence cannot always be expected. When it appears certain that grave difficulties will arise and surgical treatment is elected, the time selected for and the choice of operation, whether myomectomy or hysterectomy, are questions of the greatest importance. The nearest approach to a rule, to which there will be exceptions, is to allow the patient, if possible, to go to term under careful supervision and repeated examinations, and then to perform myomectomy or hysterectomy, according to the peculiarities of the case and the skill of the operator. It is my conviction that myomectomy during pregnancy is especially dangerous, and that in the hands of the average operator hysterectomy for fibroids complicating pregnancy is decidedly to be preferred. The real value of myomectomy under most circumstances is at best an open question.

Coe¹ thus summarizes the indications for surgical interference :

Submucous polypi may be removed in the ordinary manner when they are accessible. Subperitoneal growths can be disregarded unless they are pedunculated and become impacted in the pelvis, or undergo torsion of the pedicle, or contract adhesions. Liberation of the tumor under anaesthesia failing, it is entirely in the line of conservatism to open the abdomen, separate adhesions, or to remove the tumor, leaving the uterus undisturbed.

Tumors in the lower segment may be let alone if they are found to rise out of the pelvis as the uterus enlarges. Should the contrary be true and pressure-symptoms arise, abortion should be induced if the patient is seen at a sufficiently early stage to allow the fetus to pass the obstruction.

Conservative myomectomy may be performed subsequently, and the hope of a second normal pregnancy may be confidently held out. If there is any reasonable doubt as to the diagnosis, explorative coeliotomy is indicated, especially in view of the frequency with which impacted ovarian tumors are mistaken for fibroids. Liberation or removal of the tumor may not interfere with the course of the pregnancy. Should the tumor not be discovered until the latter half of pregnancy, it would seem better (in the absence of serious pressure-symptoms) to wait until near full term and then perform Cesarean section, followed by supra-vaginal amputation, subject, of course, to the wishes of the patient.

The usual indications for hysterectomy in cases of fibroid tumor become more urgent if pregnancy occurs, since exaggeration of the symptoms may be expected. The patient cannot bear a living child, her life

¹ Loc. cit.

is imperilled, and conservatism is out of place under the circumstances. The abdominal is preferable to the vaginal route for the extirpation of the pregnant fibroid uterus.

That pregnancy often continues and the foetus goes to term, even after the most serious operation upon the uterus and adnexa, have been demonstrated repeatedly. Wallace¹ reports the case of a woman, aged thirty-eight years, who was found upon examination to have a hard tumor in the abdomen, apparently springing from the pregnant womb. The uterus was wedged in behind the tumor in such a way that the normal enlargement of the womb necessary for pregnancy to continue was impossible. The abdomen was opened. A large calcareous fibroid, weighing more than a pound, bound down by numerous adhesions, was found, freed and removed, and two small fibroids excised from the anterior uterine wall, without any interruption to the course of gestation.

O'Shea² reports a like result from a somewhat similar operation, while Andrew J. Downes³ records the successful removal of eleven fibroids and an ovarian cyst during an uninterrupted pregnancy.

Kingman⁴ also reports a case of double ovariectomy during pregnancy. There were here cystomata of both ovaries, and later there was spontaneously expelled from the uterus a mass, measuring rather less than a pint, which was a soft, mole-like growth, made up of little cysts about the size of swelled tapioca, clear and transparent. Examination showed "hydatiform placental mole." The case illustrates the occurrence of pregnancy in such an advanced stage of disease of the ovaries that there seemed to be no true ovarian tissue left, and yet an ovule was brought to maturity and impregnation resulted.

Earle⁵ reports a successful Caesarean section in a case of fibroid tumor of the uterus complicated by twin pregnancy. Both children were safely delivered, and the fibroid tumor was permitted to remain. A rapid diminution in the size of the tumor occurred after the operation. The twins were thin, ill-nourished, and weak, evidently in consequence of the tumor using up for its own support a considerable portion of the blood-supply that would otherwise have been devoted to the nourishment of the placenta.

It is difficult to understand why hysterectomy was not done, especially so in view of the fact that more and more evidence has accumulated to show the advantage of removing the uterus in all cases of Caesarean section.

¹ British Medical Journal, 1898, No. 1948.

² Boston Medical and Surgical Journal, February 9, 1899.

³ American Gynecological and Obstetrical Journal, December, 1898.

⁴ Boston Medical and Surgical Journal, February 23, 1899.

⁵ Lancet, January 14, 1899.

Spencer¹ relates the case of a patient, aged twenty years, who had had one dead child previously without difficulty. With the second child the labor was obstructed by an ovarian dermoid, weighing sixteen ounces, incarcerated in the pelvis. As the tumor could not be pushed up laparotomy was performed, the uterus withdrawn from the abdomen, the tumor removed, and the child delivered by forceps applied in the dorsal posture. Mother and child recovered.

In the treatment of ovarian tumor obstructing labor, Spencer would push the tumor out of the pelvis if possible. He discards version, forceps, craniotomy, and simple incision or tapping of the tumor, on account of the danger. Cesarean section will very rarely be necessary if the tumor be withdrawn from the pelvis. Abdominal ovariectomy is the safer operation, and should be preferred to vaginal ovariectomy.

He also reports a dermoid ovarian tumor which was incarcerated in the pelvis and obstructed labor. The tumor was pushed up out of the pelvis under chloroform, the child delivered by forceps, and ovariectomy performed seven months later.

Carcinoma Complicating Pregnancy. Mittermaier,² writing on the treatment of carcinoma of the uterus during pregnancy, says :

“The hitherto accepted view with regard to the treatment of operable carcinoma of the puerperal uterus has been that vaginal total extirpation should only be undertaken after involution has been completed, but Ohlshausen and Fehling have pointed out that this delay is no longer indicated, partly because we now know how rapidly carcinoma progresses during the puerperium, partly because the technique of vaginal hysterectomy has been so much improved, and that, therefore, vaginal total extirpation should be practised as soon as possible.”

Following on the method of Duhrssen and Ruhl, who performed vaginal Cesarean section for dystocia due to vaginal fixation of the uterus, Ohlshausen, in March, 1897, recommended as the most rational method of treatment for carcinoma of the pregnant uterus, where the extent of the disease did not contraindicate operation, and where the pregnancy had arrived at the fifth or sixth month, that the liquor amnii should be drawn off, and then the uterus, so lessened in size and still containing fœtus and placenta, should be extirpated *per vaginam*; and in cases where gestation has arrived at the sixth or seventh month vaginal Cesarean section should be performed, the uterus emptied, and then extirpated *per vaginam*.

Mittermaier relates two cases. The first was that of a woman, aged forty-seven years, suffering from advanced carcinoma of the cervix. She miscarried at the sixth month, but the placenta remained behind,

¹ Transactions of the Obstetrical Society of London, vol. x1., part i.
² Centralblatt für Gynäkologie, 1898, No. 1.

so she was sent to Mittermaier's clinic. He removed the placenta, and then extirpated the uterus *per vaginam*. The patient recovered. The second patient was forty-three years old, seven months pregnant, and suffered from a still "radically operable" cancer of the cervix. Mittermaier curetted the disease away, freed the cervix in the usual manner, ligatured the bases of the broad ligaments, and opened Douglas' pouch and the uterovesical pouch, the latter with difficulty. The anterior wall of the cervix was divided, and after the finger had been introduced into the cavity of the uterus, to make sure that the placenta was not attached to the anterior uterine wall, the division was continued up through the latter. The membranes were ruptured, the fœtus turned and extracted. It died shortly after delivery. The placenta was then removed and the uterine wound temporarily stitched up with a continuous catgut suture. The firmly contracted uterus was forthwith removed *per vaginam*, the broad ligaments being ligatured with catgut. The bleeding was inconsiderable throughout. Perfect recovery followed.

The author strongly commends the procedures followed as the most suitable methods of dealing with cases of carcinoma uteri complicating pregnancy.

Allerthum¹ reports a case of vaginal extirpation of a carcinomatous uterus in the sixth month of pregnancy, operated on by Hegar.

The disease was limited chiefly to the posterior positions of the portio and the cervical canal. At first an attempt was made to remove the uterus and its contents entire, but their great bulk did not allow of such a proceeding. The anterior lip of the cervix was therefore pulled down as far as possible, and (the previous manœuvres having freed the uterus from the bladder in front and the bases of the broad ligaments laterally) the anterior wall of the body of the uterus was opened by a vertical incision, four inches in length, extending upward from the os internum; the cervix itself was left intact, in order that the disease might be interfered with as little as possible. The liquor amnii was drained off, and then it was discovered that the incision ran directly on to the placenta, which was situated on the anterior wall. It was stripped off, removed, and the fœtus then extracted. The uterus sank of its own accord deeply into the pelvis, and its remaining attachments were easily ligated and divided. The vaginal wound was closed by catgut button sutures, which included the stumps of the broad ligaments. The patient made a good recovery.

Fritsch² has twice performed the abdominal total extirpation of the pregnant uterus, at term, with favorable results; but he stigmatizes the operation as "right difficult, bloody and prolonged," and complains that

¹ Centralblatt für Gynäkologie, 1897, No. 27.

² Ibid., 1898, No. 1.

in spite of the triumph of technique the patients died within a year. This he attributes to the difficulty of seeing exactly what one is doing, and the consequent necessity for feeling one's way through the operation, with the hope that healthy and not diseased tissues are being cut through. Fritsch had previously removed *per vaginam*, with difficulty, a septic uterus during the second week of the puerperium, and he somewhat feared the size of the full-term uterus in dealing with it by the same route. However, he reports a case which demonstrates his success. A woman, married since 1881, age not given, who had always enjoyed excellent health and had passed through four normal labors, became pregnant again in November, 1896. When she came under observation she presented the signs and symptoms of carcinoma of the portio, plus those of pregnancy. The disease was limited to the portio, involving all of it except a small area on the posterior lip. Fritsch decided to perform abdominal extirpation on the day following that on which his examination was made (June 26, 1897). During the night, however, labor pains came on. When Fritsch examined he found the os dilated to 6 cm. He cut through the healthy posterior part of the cervix with scissors, applied forceps, and delivered a living child. The patient was then anesthetized, and her uterus forthwith removed *per vaginam*. Recovery ensued, and there has been as yet no recurrence.

Fritsch lays stress on the opening up of the uterus by incisions if necessary—the procedure named by Dührssen “vaginal Cesarean section”—and the delivery of the child by forceps or version. The placenta must be removed, otherwise the uterus will be large and give trouble in the subsequent hysterectomy.

The success of the operation in this case inspires Fritsch to declare that “abdominal extirpation should no longer be carried out in such cases—not even Cesarean section or Porro's operation, followed by total extirpation from above.” He concludes a somewhat dogmatic paper by urging that rupture of the parturient uterus should also be treated by vaginal extirpation of the whole organ.

Seiffart¹ reports a case of vaginal Cesarean section for cancer of the uterus, followed by immediate removal of the whole uterus. He secured a living child, but the mother died the second day after the operation from heart failure. Seiffart states that in future he will not immediately remove the uterus, except under most favorable conditions—that is, a small child, large vagina, and limited extension of the growth. In other cases he will deliver the child and postpone the removal of the uterus until the woman has regained her strength.

Appendicitis Complicating Pregnancy. A considerable amount of

¹ Centralblatt für Gynäkologie, 1898, No. 5.

attention has of late been directed to this subject, and numerous cases complicating pregnancy and the puerperal period have been reported. Marx¹ reports five cases, and considers that, at best, appendicitis is rare during pregnancy, though he believes that it occurs with greater frequency than has heretofore been taught. During pregnancy the enormous congestion of the entire vulvo-vagino-uterine tract, which is readily reflected upon the entire intestinal system, causing, as it does, plethora, followed by torpor of the gut with the subsequent marked constipation, plainly acts as an exciting cause of appendicitis.

Bue² finds that the gravity of appendicitis is considerably increased when complicated by pregnancy. Various circumstances in pregnancy tend to light up acute mischief in a quiescent but previously inflamed appendix. These are the frequent constipation of pregnancy, mechanical disturbance of the parts due to growth of the pregnant uterus, and congestion of the pelvic organs. One author quoted estimates the mortality of appendicitis during pregnancy at 31.2 per cent., and that of appendicitis in general at 12.8 per cent.

M. Pinard³ relates a case under his own observation, and furnishes, also, a table of cases recorded up to the present time.

The patient, aged twenty-five years, was six months pregnant when she was seized with the typical symptoms of acute perforative appendicitis. Signs of general peritonitis rapidly ensued. Ségond made an incision over the cæcal region in the usual way. Pus was found free in the peritoneal cavity, surrounding the uterus and extending into the left iliac fossa. A similar incision was, therefore, made on the left side, seropurulent fluid being evacuated in large quantity. The peritoneal cavity was flushed out and gauze drains inserted. The same morning premature labor came on, the fœtus being expelled naturally. The patient, however, died within twelve hours. Post-mortem two perforations were found in the appendix, and the uterus was surrounded by numerous recent adhesions. The blood of the fœtus was cultivated, and furnished pure cultures of *bacillus coli commune*, and it may be fairly assumed that this organism was the cause of the fatal peritonitis, although cultures were not made from the maternal tissues.

An analysis of forty-five cases showed the gravity of appendicitis complicating pregnancy. Of these thirty were operated upon, giving a maternal mortality of 33 per cent. and an infantile mortality of 36 per cent. Fifteen cases were not operated upon; of these two mothers died, giving a mortality for mother and child of 13 per cent.

In some instances appendicitis has occurred in the early months of

¹ American Journal of Obstetrics, August, 1898.

² La Médecine Moderne, March 12, 1898.

³ Annales de Gynecologie, April, 1898.

pregnancy ; in others it has arisen at the end of the puerperal period. If it occurs before the end of pregnancy, the expulsion of the fœtus is the rule.

The child is often born dead, or dies in a few days with signs of septicæmia, probably due to infection by the bacillus coli commune. All the types of appendicitis have been met with during pregnancy, and the diagnosis may at times be very difficult.

TREATMENT. With regard to treatment, the literature of this disease indicates that operation should be undertaken earlier even than in cases where pregnancy does not exist.

The Treatment of Retrodisplacement and Incarceration of the Pregnant Uterus. In cases of retroflexion of the gravid uterus, with incarceration, the usual treatment is either to replace the uterus or, that being impossible, to empty it, and so save the life of the mother. Mann,¹ however, recommends that if it is impossible to replace the uterus, the abdomen should be opened and the fundus pulled up by the hand introduced behind it. If the uterus be so large as to completely fill the pelvis, efforts at replacement through the vagina will fail, because when it is pushed up nothing can enter from above to take its place, and when the pressure is withdrawn from below atmospheric pressure forces the uterus down to its old false position. This occurs even in the knee-elbow position. Furthermore, when pregnancy exists with adhesions reposition may be impossible until the adhesions are broken down by the hand on the inside.

The author relates two cases where he performed this operation, and in one, which was traced, subsequent pregnancy and labor were normal. In one case it was necessary to tap the bladder above the pubes, but this did not interfere with the result.

Dr. Murdoch Cameron, of Glasgow, reported a similar case, with good results, in 1896.

France² reports the case from the University Clinic of Halle of a girl, aged eighteen years, who entered the clinic, stating that she had always been healthy, but of late had suffered with incontinence of urine and swelling of the legs. The abdomen was distended and painful labor pains were present, and during the pains the vulva and anus were distended. The vagina was occupied by a tumor and barely admitted the finger. Above the symphysis the feet and breech were felt. The cervix and os could not be found. The case was diagnosed as pregnancy of the seventh month, complicated by a tumor, probably dermoid, located in Douglas' pouch and obstructing the pelvis. Fœtal heart-sounds were not heard. As an attempt to push the tumor

¹ American Journal of Obstetrics, July, 1898.

² Münch. med. Wochenschrift, No. 1.

out of the pelvis under chloroform anæsthesia was unsuccessful, it was punctured with a trocar. A whitish, grumous liquid was brought to light, which was thought to originate from a dermoid. After this laparotomy was decided upon, and it was then found that the presumed tumor was nothing else but the incarcerated pregnant uterus. The dead child was extracted by the feet, and an opening behind the ear showed where the trocar had entered, and that the whitish material was foetal brain matter. The uterine opening was closed by suture. The woman recovered.

Duhrssen,¹ speaking of the controversy between Ahlfeld and Zweifel in regard to the treatment of the incarcerated, retroflexed, pregnant uterus, reiterates his opinion that the methods advocated by Zweifel, of producing artificial abortion, should be used in a majority of cases. He believes that the attempt to replace the uterus entails danger to the mother, and that Ahlfeld's method of frequent catheterization and wearing of the ring-pessary is ineffectual.

Pregnancy following Ventrofixation and Alexander's Operation.

Out of the 111 cases collected by Smith,² pregnancy took place in six. In three, pregnancy and labor were perfectly normal; one woman had pain and elevation of temperature for two or three weeks before delivery, but a perfectly normal confinement; another had a normal confinement, but the child was dead, while the remainder miscarried at the seventh month. Out of a large number of collected cases where the uterus was firmly attached to the abdominal wall, and pregnancy followed, trouble of some kind took place in 30 per cent. of the cases, either pain, miscarriage, or difficult labor requiring interference. In the other 70 per cent. labor was normal, without other inconvenience than a dragging pain in about half of them. Where the uterus was attached to the parietal peritoneum a few relapses occurred, but the patients were free from pain during pregnancy, and the labors were less tedious and did not require serious interference.

Out of a large number of cases of pregnancy following Alexander's operation, in no case was the pregnancy or labor unfavorably influenced, and as the results of this operation are so good, the author suggests that in cases where there are adhesions these should be broken down through a small median incision, and then the round ligaments should be shortened by Alexander's method, after which the abdomen should be closed.

Pregnancy and Labor in Cases in which Amputation of the Cervix has been Performed. Auderbert³ reviews the histories of six-

¹ *Centralblatt für Gynäkologie*, November 28, 1898.

² *American Journal of Obstetrics*, July, 1898.

³ *Annales de Gynécologie*, 1898, vol. xlix.

teen cases in which amputation of the cervix had been performed previously. He finds that the condition which remains after this operation influences pregnancy and labor in a very marked way.

These sixteen patients had twenty-two pregnancies, and but five of these went to full term. As to the length of labor, it was often prolonged by premature rupture of the membranes. Labor varied from twelve to twenty hours in length. A considerable number of abnormal presentations was also noticed in these cases, among them three shoulder presentations. The foetal mortality was 5 per cent. Interference was necessary more often than usual, to secure complete termination of labor.

In caring for these patients during pregnancy every precaution must be taken not to excite uterine contractions and bring about premature rupture of the membranes. When labor has actually begun, dilatation may be shortened by using elastic bags, or by the hand, or by making multiple incisions if necessary.

ACCIDENTS IN LABOR.

Placenta Prævia. Lawson Tait¹ comments on the great danger to mother and child in cases of placenta prævia, and considers that in view of the high mortality the removal of the uterus is justifiable in some cases. He relates an instance in which alarming bleeding was present from this cause, and, reasoning from the results following cœliohysterectomy, that the operation would save the child and the mother, and that it would relieve her of the perpetual misery and risk in which she had been living for years, the Tait-Porro operation was performed, a fine female child was born alive, and the mother made an excellent recovery.

AIR EMBOLISM FOLLOWING PLACENTA PRÆVIA. Zorn² reports the case of a XII-para, to whom he was called on account of hemorrhage occurring at or near full term. Vaginal examination showed the os nearly fully dilated and the lower uterine segment occupied by the placenta, slight labor pains, and the head above the inlet. Podalic version after perforation of the placenta, careful extraction and removal of the placenta, were accompanied by only slight loss of blood. The patient's condition was good until three hours post-partum, when symptoms of collapse suddenly appeared. Improvement followed the administration of stimulants. Collapse reappeared twice at short intervals, and, in spite of proper medication, the woman perished about four hours post-partum. The subsequent post-mortem demonstrated the absence of any injuries to the genital tract. The uterine vessels and also the

¹ *Lancet*, February 11, 1899.

² *Münch. med. Woch.*, 1898, No. 18.

right heart showed the presence of large quantities of air, and in the absence of other pathological changes the diagnosis of the case as air embolism appears justified. These cases are exceedingly rare, as Zorn found only five others in literature.

Accidental Hemorrhage. Dreier¹ reports five cases of premature detachment of the normal placenta, with one maternal death and the death of all the children. Contrary to the observation of most authors, he states that in none of his cases was albuminuria present. He considers endometritis the most important etiological factor. Such a condition results in degenerative changes of the uterine vessels, which consequently easily tear, forming a post-placental hemorrhage. Dreier advises rapid evacuation of the uterus.

Schwarzwaeller² reports a case of accidental hemorrhage in a multipara, aged thirty-five years, about eight months pregnant. Without any warning the patient was seized with an attack of syncope, which repeated itself two hours later, this time accompanied by vomiting. Soon after this there was slight flowing, and the patient complained of great abdominal distention. Labor pains were absent. The face and also the visible mucous membranes were pale, and the patient had the expression as if suffering from a very acute anemia. The pulse was rapid and small; the fetal heart-sounds could not be heard. The cervix was not dilated, but admitted two fingers. The membranes were ruptured, and after podalic version a dead fetus was slowly extracted. Delivery of the child was followed immediately by the expulsion of the placenta and large quantities of fluid and coagulated blood. Attempts to arrest the very severe bleeding by means of tampons and hot irrigation, also manual compression, utterly failed, and the patient died shortly after the delivery of the fetus. In such desperate cases he believes it is permissible, as a last resort, to invert the uterus and arrest the bleeding through constriction of the cervix.

Rupture of the Uterus. In the Clinical Report of the Rotunda Hospital³ the case of a multipara who received a severe kick in the abdomen is reported. Tedious and neglected labor followed, with shoulder presentation and protrusion of the fetal hand.

On examination the child was found dead, the uterus ruptured and tightly contracted. Delivery was accomplished by decapitation. The rent in the uterine wall was three inches in length, in the lower segment to the right and posterior. A thick plug of iodoform gauze was passed through the rent, a hypodermatic injection of ergotin was given, and the patient removed to the hospital, where she received aseptic

¹ *Centralblatt für Gynäkologie*, 1898, No. 18.

² *Ibid*

³ *Dublin Journal of Medical Science*, June, 1898.

care. The gauze was removed in twenty-four hours, and the patient made an uncomplicated recovery.

INCOMPLETE RUPTURE OF THE UTERUS IN PLACENTA PRÆVIA. At a meeting of the Obstetrical Society of Vienna, Schultze¹ reported a case of placenta prævia in which it was necessary to immediately make version to stop a severe and prolonged bleeding. The os and cervix would admit but three fingers, but the cervix was very soft and the version was readily made. A half hour afterward the child was easily born. A very severe hemorrhage followed the expulsion of the child and placenta, and this could not be checked sufficiently early to rescue the patient. On examination an incomplete rupture of the uterus was found, and also a partial separation of the pubic joint and increased mobility of the sacro-iliac joint. The tear in the uterus began at the cervix.

In discussion it was brought out that special danger of uterine rupture exists in placenta prævia, because the cervix and lower uterine segment are always very greatly softened.

INSTRUMENTAL LACERATION OF THE UTERUS, IN A PSEUDO-PREGNANCY, NECESSITATING ABDOMINAL SECTION. Von Guérard² records an interesting case. The patient was twenty-seven years of age, and presumably in her second pregnancy. Her condition was such as to indicate the necessity for the performance of Cesarean section unless labor could be terminated promptly by other means. Two years before the patient had passed through a normal labor and puerperium. The last menstruation had taken place nine months previously, and the first fetal movements had been noted at the beginning of the fifth month of pregnancy. The attendant having found her in an urgent condition, had rather forcibly introduced a bougie into the uterus to institute labor. The patient at once suffered from sever labor pains, which continued for two days, and were aggravated by every movement. When seen by von Guérard her temperature was 39.1° C. and her pulse 120. The abdomen yielded what appeared to be fluctuation, and was much distended. There was no swelling of the legs or eyelids. The vagina presented the appearances of a normal pregnancy, being soft and succulent. The cervix was hard and badly torn, and markedly projecting into the vagina. There was no marked lividity of the vaginal mucosa. In order to clear the diagnosis a sound was next introduced into the uterus. It did not meet with the usual degree of resistance, but passed for an indefinite distance, and yielded the characteristic sensation experienced in the presence of uterine perforation. Abdominal section revealed on the left side of the uterus a ragged tear surrounded by an

¹ Centralblatt für Gynäkologie, 1898, No. 19.

² Ibid., July 9, 1898.

area of pelvic inflammation. The tissues were glued together by inflammatory exudate, which, when examined microscopically, disclosed the presence of tubercle bacilli. The fluctuation was explained by the presence of ascitic fluid. The operation was well borne, and the patient left her bed on the sixteenth day. The perforation had occurred when the first instrument had been passed, and resulted from a morbid softening of the uterine tissue, a sequel of an old localized tuberculous process in the pelvic tissues.

RUPTURE OF THE UTERUS DURING UNOBSTRUCTED LABOR. In the *Transactions of the Obstetrical Society of London*,¹ Dakin reports the case of a woman in her eleventh labor, aged forty years, who had a normal pelvis and whose child was in the normal position. Former labors had been normal, and there was no history of acute disease, although the patient was not well nourished. The woman had some sharp pains, followed by slight bleeding. The membranes ruptured and the os dilated completely. As the patient was pale and had a pulse of 100, she was delivered easily by forceps of a dead child. Efforts made to express the placenta were unsuccessful. The physician, who introduced the hand, found above the external os a rent on the right side and the placenta half-way through it. He extricated the placenta, and then severe collapse occurred, in which the patient died.

On autopsy the abdomen was found to be full of blood. The uterus was well contracted. The tear extended from a point a little above the internal os and three-quarters of an inch below the retraction ring to a point between the right tube and round ligament. The tear was at first almost horizontal, then oblique, and then vertical. The placental site was torn through by the rupture. A microscopical study of the muscle fibres showed them to be fatty and abnormally friable.

TREATMENT. Robson² advocates the use of gauze packing in cases of uterine rupture. The edges of the laceration should be held apart by an assistant, and after curetting and washing out the fundus of the uterus, and compressing the abdomen so as to force all the free blood possible out, the laceration should be packed very thoroughly with long strips of iodoform gauze, the packing filling, if need be, Douglas' pouch as well as the whole of the laceration and the upper part of the vagina. A firm pad should then be applied above the pubes, and be kept in place by an abdominal bandage. The packing should be changed on the third day, and after that every second day.

Rupture of the Symphysis Pubis During Labor. This is of especial interest in the light of modern symphysiotomy, as it seems to show how nature would terminate a case of obstructed labor. Lee³ reports

¹ Vol. xl., part I.

² Practitioner, July, 1898.

³ American Journal of Obstetrics, October, 1893.

two cases. In the first there was found, on examination after delivery, during which the patient suffered great pain, referred to the pubis and the region of the left sacro-iliac joint, great tenderness over the symphysis, and on deep pressure an indefinite groove. A tight binder was first applied, later a frame that could be elevated from the bed to enable the woman to attend to urination, etc. At the end of the seventh week the patient walked nearly as well as before labor, and a little later had nothing to complain of. In the second case, a multipara, in which podalic version had been performed, three weeks after labor there was great pain and tenderness over the pubis, with a hard, dense, fluctuating tumor, extending nearly to the navel. The temperature was 104° F., the pulse between 100 and 110. Operation revealed a large abscess around the pelvic joint, the ends of the symphysis being three-quarters of an inch apart and much eroded. Examination of the pus showed a pure culture of streptococcus pyogenes.

Ahlfeld collected 100 cases of rupture of the symphysis pubis up to 1876.

THE TREATMENT of the fracture, if determined after labor, may consist of a pelvic binder improvised with a roller towel, if the patient can tolerate the restriction; immobilization of the pelvis by adhesive straps, plaster, etc., such as are used by symphysiotomists; or a frame may be used, arranged with a suspension-apparatus, so that the patient can be raised from bed. For obstinate cases the joint might be wired or nailed together or resected.

Inversion of the Uterus. On this rare condition little has been presented in the line of symptomatology or diagnosis. Küstner's operative method of reduction, described below, has been several times tried, and with success, even during the puerperium. Perlis¹ insists that in acute cases the danger is death from hemorrhage, two out of three cases dying within an hour; the bleeding, therefore, must be stopped immediately. Reversion is the first thing to be tried, and if this does not succeed an elastic ligature should be tied around the uterus near the cervix. He has seen six cases of chronic inversion, but only one in the acute condition. This occurred on the third day post-partum, and although reversion under anaesthesia was at once attempted, it did not succeed. Yet Cooseman² reports two cases that were easily reduced manually by the ordinary methods. The two following cases show the value of surgical treatment when manual means fail.

F. A. Kehr³ reports an interesting case in a primipara. The placenta was pulled out by means of the umbilical cord by a midwife, and a tumor appeared with alarming hemorrhage. The physician who was

¹ Centralblatt für Gynäkologie, 1898, No. 9.

² Obstetrique, September, 1898.

³ Beiträge zur G. and G., vol. i., Heft 1.

called after twenty-four hours, like the midwife, failed to recognize the condition and ordered hæmostatic agents and put a ring around the tumor. In Kehrer's clinic, a couple of weeks later, an inversion of the uterus was diagnosticated. The reposition, after Sims, with narcosis, did not succeed, and Kehrer therefore made a median long incision in the uterus through the anterior wall from the external os to the middle of the body. He then pressed the fundus from behind and below through the wound, which in a great measure succeeded, and while an assistant held the fundus in its place the wound was stitched with catgut stitches from the fundus toward the os. After about half was closed he succeeded in pushing the fundus entirely through the wound into the abdominal cavity. The rest of the wound was stitched from inside the cavity of the uterus and the uterus was tamponed with gauze. The patient recovered.

Switalski¹ describes a case of total inversion of the uterus after an abortion, which occurred in a thirty-six-year-old IV-para. The last child had been born three years before. The previous year she had aborted at the fifth month, great hemorrhage following, and the placenta coming away only after several hours. From this time she had repeated hemorrhages, so that she went for a few weeks into the hospital. There total inversion was diagnosticated, and since reposition was unsuccessful she went to the Cracow clinic. The tumor was met with an inch or two within the vaginal canal. The cervix was 12 mm. long, its walls strikingly thin, and the external os measured 2.5 cm. in diameter. With the speculum the mucous membrane of the inverted uterus was seen to be irregularly red, with many small superficial extravasations of blood, giving it a marbled appearance. Under chloroform narcosis, after fixation of the cervix by means of Muzeux's forceps, reinversion was carefully attempted after Kiwisch's method, also Emmet's. This was not only in vain, but the attempts resulted in tearing the anterior wall of the cervix and loosening the bladder from the uterus to the vesico-uterine plica. After this operative reinversion was tried, done according to Küstner's method. An incision was made in the posterior fornix, and Douglas' pouch was opened; then a long incision on the posterior wall of the uterus in the median line was made, which extended to within 2 cm. of the external os. Hemorrhage was slight, only one spurting vessel being tied. The uterus was now easily reinverted, after which it was brought through the posterior fornix into the vagina and its posterior wall sutured in stages, the peritoneum being stitched with Lembert sutures. The uterus was replaced in its proper position and the wound in the posterior fornix stitched. The patient left the hospital two weeks later, cured.

¹ Centralblatt für Gynäkologie, 1898, No. 3.

BACTERIOLOGY OF THE VAGINA.

The bacteriology of the pregnant and puerperal vagina is a subject of first importance, deciding as it does the nature of the treatment to be adopted in every case of labor, in view of the possibility of auto-infection and the necessity of prophylactic antiseptic vaginal douches. Williams outlines the work already done, reviewing the whole of the literature of this subject, beginning with Gonnor's paper in 1887. In the examination of the vaginal secretion of thirty-two pregnant women, Gonnor found that it did not contain the pathogenic micro-organisms which are usually found in puerperal infection, and concluded that auto-infection was not possible and that vaginal antiseptic douches were not necessary. In the same year Döderlein found that the pyogenic organisms—both staphylococci and streptococci—were present in the lochia. He therefore concluded that auto-infection was possible, and that prophylactic vaginal douches were urgently indicated.

Thus there were then, as now, two classes of observers whose results were absolutely contradictory. Results confirmatory of both these views were published frequently from this time on, but in 1892, Döderlein bid fair to reconcile previous conflicting statements in his monograph on "Vaginal Secretion." He distinguishes two varieties of secretion—normal and abnormal—the former sterile, whilst the latter often contains various pyogenic organisms, the streptococcus being the most common. Results obtained by Williams and by Burekhardt tended to confirm Döderlein's views, but in 1894 Krönig arrived at diametrically opposite conclusions, stating that "The vaginal secretion of pregnant women who have not been examined, no matter whether normal, pathological, or highly pathological, never contains organisms which grow aerobically upon the ordinary media at the body temperature, except yeasts and gonococci, and therefore never contains septic bacteria. The vagina of every pregnant woman who has not been examined is, therefore, aseptic." He believed that Döderlein's conception of normal and abnormal secretion was erroneous, and that the pathogenic organisms found by Döderlein, Burekhardt, and others had been introduced into the vagina by their own manipulations. Krönig also demonstrated that the vaginal secretion possesses a marked bacterial power, destroying pathogenic organisms when introduced into the vagina, and stated that we may consider the vagina of a pregnant woman aseptic if we are sure that two or three days have elapsed since she was touched. This bactericidal action of the vaginal secretion Krönig considered to be due to : (1) Chemical substances in the secretion, perhaps acid ; (2) the antagonism between the vaginal and imported bacteria ; (3) phagocytic action, and (4) the lack of oxygen.

Later investigators, including Döderlein, Walthard, Vahle, Winter, and Kottmann, have found streptococci and other pathogenic bacteria often present. Krönig considers that the positive results thus obtained were due to bacteria being carried into the vagina from the vulva in collecting the secretion, and employs in order to prevent this a double tube invented by Menge. In his late investigations¹ on ninety-two cases, Williams took advantage of this double tube, with the result that he contradicted his own work of 1893 and goes over to the minority with Krönig, to say that there are no pathogenic germs in the vagina (except gonococci) whether the secretion be normal or abnormal. In each case the character of the secretion obtained was noted, and cover-slips were made, along with inoculations on agar, acid agar, glucose agar, and blood-serum. The agar plates were found absolutely sterile in 59 per cent. of the cases, except for yeast colonies on some of them, while various bacteria were obtained in 41 per cent. Out of the ninety-two cases examined, cocci were found in twelve (excepting the gonococci, which were found in four), six of which grew on agar plates whilst the rest grew only anaërobically; and of the twelve there were only three which could be considered as pyogenic, namely, the staphylococcus epidermidis albus in two cases, and a strictly anaërobic streptococcus. The vaginal bacillus of Döderlein was cultivated in twenty-eight cases, and in eighteen other cases a closely related bacillus. In eleven cases a short, thick aerobic non-pathogenic bacillus was found; in three cases gas-producing aerobic bacilli, one of which belongs to the colon bacillus group, the other two being unidentified. A bacillus corresponding to the bacillus enteritidis of Gärtner and to the bacillus subtilis was each cultivated in one case. Yeasts were found in twenty-six cases. Anaërobic bacilli of various descriptions were also found in fifteen cases.

This interesting paper concludes thus: "As the result of our work, we would say that the vaginal secretion does not contain pyogenic cocci, and, therefore, cannot afford the slightest support for the doctrine of auto-infection as far as they are concerned, and we are unable to find any evidence of auto-infection from other bacteria in any of our puerperal cases. But the finding of a pathogenic gas-producing bacillus in the vaginal secretion of a pregnant woman who had not been examined would appear to indicate that in rare instances it may be possible for some of the various bacilli which are found in the vagina to give rise to an infection without the aid of external agencies. Such infections did not occur in our cases, and possibly may never occur; but until we shall have devised means for isolating and studying the various organisms which we can see in cover-slip preparations, but cannot cultivate, we shall not be able to deny positively the possibility of auto-infection

¹ American Journal of Obstetrics, 1898, vol. xxxviii., No. 4.

from such sources, but, at the same time, we can absolutely deny the presence of pyogenic cocci in the vaginal secretion of pregnant women, and assert positively that none of the usual forms of puerperal infection can be due to auto-infection. Such being the case, the prophylactic vaginal douche should be discarded as useless, and probably as injurious, as has been shown by Krönig from the experimental and by Leopold and Mermann from the clinical point of view. Conclusions: 1. We agree with Krönig, that the vaginal secretion of pregnant women does not contain the usual pyogenic cocci, having found the staphylococcus epidermidis albus only twice in ninety-two cases, but never the streptococcus pyogenes or the staphylococcus aureus or albus.

2. The discrepancy in the results of the various investigators is due to the technique by which the secretion is obtained.

3. As the vagina does not contain pyogenic cocci, auto-infection with them is impossible; and when they are found they have been introduced from without.

4. The gonococcus is occasionally found in the vaginal secretion, and during the puerperium may extend into the uterus and tubes.

5. It is possible, but not yet demonstrated, in very rare instances that the vagina may contain bacteria which may give rise to sapræmia and putrefactive endometritis by auto-infection.

6. Death from puerperal infection is always due to infection from without, and is usually due to neglect of aseptic precautions on the part of the physician and nurse.

7. Puerperal infection is to be avoided by limiting vaginal examinations as much as possible and cultivating external palpation. When vaginal examinations are to be made, the external genitalia should be carefully cleansed and disinfected and the hands rendered as aseptic as if for a laparotomy. Vaginal douches are not necessary, and are probably harmful.

To prove this second conclusion—namely, that the discrepancy of the various investigators was due, on the part of those who found pathogenic micro-organisms, to faulty technique—Williams instituted¹ a second series of investigations on twenty-five pregnant women who had not been previously examined. He removed, with a platinum wire, some of the secretion from the margins of the hymen and the inner surface of the labia minora, then took some secretion with Menge's tube, and immediately afterward introduced a sterile glass speculum into the vagina and obtained the secretion from portions of the vaginal wall which apparently had not come in contact with the speculum. Staphylococci were obtained from the vulvar secretion in

¹ American Journal of Obstetrics, 1898, vol. xxxviii., No. 6.

60 per cent. of the cases, in the speculum secretion in 40 per cent., and were uniformly absent from the Menge's tube secretion.

Though this work of Williams, especially in conjunction with that of Krönig and Menge, gives but a small margin for those who believe in the possibility of auto-infection, Ahlfeld¹ distinguishes eight ways in which it may be brought about. By : 1. Spontaneous wounds of the organs (rupture of uterus or wall of the vagina). 2. Deep cervical tears. 3. Prolongation of the expulsion period (especially in narrow pelvis or faulty position of the fœtus). 4. Retention of parts of the placenta. 5. Formation of placental polyps. 6. Retention of chorion or decidual fragments (usually only a slight rise of temperature). 7. Wandering of germs from the vagina into the uterus in the course of the puerperium in cases of subinvolution and dilatation of the lower uterine segment. 8. Peritonitis or parametritis during the puerperium from pre-existing abscesses (principally gonorrhœal processes).

Kottmann,² who found pathogenic germs in the vagina of pregnant women, was able to cultivate after a time the anaërobic organisms found aërobically, and likewise succeeded in making non-virulent ones virulent. And Halle³ claims that some of the anaërobic germs found by himself under similar circumstances were pathogenic. Burekhardt⁴ did some work from another side. He examined the uterine secretion taken from cases having a normal labor and puerperium, eleven or twelve days post-partum, and found bacteria in thirteen out of fourteen cases, though they were usually saprophytes ; but in three cases he found staphylococci and streptococci.

THE PUERPERIUM.

The Pulse. The slowing of the pulse noticed during the puerperium has been set down for some time as physiological during that period, but Heil⁵ denies this, and says : "Since Blot's paper before the Paris Academy in 1863 a physiological slowness of the pulse during the puerperium has been spoken of." According to Ohlshausen, 47 per cent. of puerperal women show some slowness of the pulse. After a "few examinations" he (Ohlshausen) said that frequently during pregnancy a slowness was observed. Heil counted among 100 women in the Heidelberg clinic with slight pelvic and genito-urinary disease, 49 with a pulse under 65, and even 60 occurred several times. Under the same conditions, he counted the pulse of 100 women during pregnancy and the

¹ *Centralblatt für Gynäkologie*, 1898, No. 36.

² *Archiv f. Gyn.*, 1898, vol. lvi., Heft 3.

³ *Centralblatt für Gynäkologie*, 1898, No. 26.

⁴ *Archiv für Gyn.*, 1898, Band lvi., Heft 2.

⁵ *Thèse de Paris*, 1898.

puerperium. During pregnancy a pulse of 48 was observed twice, during the puerperium, 45 once and 48 once. The percentages of the whole were: During pregnancy under 60, 11.45 per cent.; during pregnancy under 65, 24.45 per cent.; during pregnancy under 75, 60.8 per cent.; during puerperium, within the first ten days, under 65, 18.1 per cent.

Therefore, under 65 was observed more frequently during pregnancy than on any day of the puerperium. Only in twelve cases, or 12 per cent., was the average pulse count more than ten beats less than during pregnancy.

The Proper Time for Rising Post-partum. Brutzer¹ discusses this subject in a comprehensive article. He claims that it is only a preconceived prejudice which says that early rising from the bed predisposes to retroflexion, prolapse, emboli, etc. In Küstner's clinic, at Breslau, experiments to disprove this were made on 974 women. Of these, 599 arose between the second and fifth day, 233 between the fifth and tenth day, the remainder after this time. He concludes that early leaving the bed does not injure; does not cause the temperature to rise; that the pulse is but slightly hastened; that bowel movements usually result earlier; that retroflexion is not found more frequently; that the general health and appetite are better, and, therefore, the decrease in weight less. He found that rising on the second day was followed by no bad results, and recommends that in a normal course to the fifth day, without complications (perineal tears, etc.), the patient should be allowed to rise on that day, the physician watching her for the next couple of days. Krönig² believes it worth while to try this plan of allowing the patient to leave her bed on the third day, in order to see if there will be less late hemorrhage and late fever, the causes of which are not always clear.

Subinvolution. Knapp³ treated twelve cases of delayed involution by curettement. They were cases in which no membrane had been left behind and in which no cause (fever, operative delivery, non-activity of the breasts, or general disturbances of nutrition) could be seen. He did the curettement if, on the seventh or eighth day, the fundus was still midway between the umbilicus and pubes. To determine this combined examination was done, since the external examination alone, as well as sounding, may sometimes mislead one. Four or five days after the curettement the uterus could never be recognized above the symphysis, and the patients were allowed to leave the hospital twelve or thirteen days post-partum. By conservative treatment—namely, waiting

¹ Zeitschr. f. Geburts. u. Gyn., Band xxxvii., Heft 3.

² Gesellsch. f. Geb. zu Leipzig, January 17, 1898; Centralblatt für Gynäkologie, 1898, No. 30.

³ Archiv für Gynäk., 1898, Bd. lv., Hft. 2.

—the involution would have kept them a much longer time in the hospital. He recommends curettement in subinvolution, even when no placental tissue or membrane remains behind. Pincus¹ recommends for subinvolution vaporization of the uterus by steam at 102° F. for one-quarter to one-half minute.

Puerperal Infection. Much has recently been written on the signification of the term puerperal fever—a term that should be discarded for “puerperal infection.” In its widest signification puerperal fever is taken to mean any fever occurring during the puerperal period, no matter what the etiology. Looking at it from this aspect, Williams called different series of his cases puerperal fever when the temperature rose once or oftener to 101.4° F., and throughout Europe about the same standard is given. But lately this broad definition has led to considerable confusion, especially in several parts of Germany, where cases of puerperal fever must be reported to the police and certain restrictions be placed on the doctor and midwife. Bumm² and Ohlshausen³ contend that only such cases ought to be so designated as are actually caused by the known pathogenic micro-organisms that ordinarily bring about the sepsis. These would include the streptococcus, staphylococcus, bacillus coli communis, and possibly sometimes the pneumococcus. There would be excluded the micro-organisms of diphtheria, tetanus, and gonorrhœa, though they, too, occasionally give rise to fever and even a condition of general sepsis when invasion has occurred through the genital tract. This would likewise differentiate pure sepsis from putrid intoxication and limit the signification of puerperal fever to the former. “But,” Bumm asks, “how are we to differentiate the two conditions? In the hospital the microscope is at hand, and can be used, but country practitioners are not always so provided.” Yet he insists even they can recognize the different conditions if a close examination be made. There is no difference between the puerperal wound and wounds on other parts of the body. Non-infected wounds present a good appearance in spite of the fact that the lochial secretion may be offensive, the base being red, the surrounding tissues neither swollen nor changed. Infected wounds show a grayish-white, unhealthy looking membrane, which may be grayish or brown if there is also decomposition going on. If the tips of the portio are drawn apart, this membrane can be seen in the side tears and on the cervical mucous membrane, and one can conclude the same condition to be present on the mucous membrane of the uterus. But Ohlshausen denies this—that the two conditions can be diagnosed by the naked eye, by the appearance of the mucous membrane of the uterus—and, moreover, it is not possible in private practice

¹ Centralblatt für Gynäkologie, 1898, No. 10.

² Ibid., 1899, No. 6.

³ Ibid., 1899, Nos. 4 and 6.

to put every patient with a slight fever across the bed for a visual examination. He, therefore, believes that the question stands at its original place, and although we ought to make a differentiation between the light and the severe cases, and between putrid intoxication and sepsis, we are as yet in many cases practically unable to do so. Bumm then suggests that puerperal fever be put into the hands of the Board of Health, like diphtheria and tuberculosis, in order to have the secretion examined for septic germs.

Finally, the very term puerperal fever may be questioned, because there are cases of puerperal sepsis accompanied by a subnormal temperature. Harding¹ reports a case in which two thermometers were employed to prevent errors, as follows: Three days after the rupture of the uterus the patient was delivered with forceps. Before delivery the temperature was 96.1° and the pulse 130. During the following five days, until death occurred, the temperature ranged between 96.1° and 96.3°, while the pulse rose to 160.

From the stand-point of pathology, almost every text-book gives a different classification, according to the lesions of puerperal infection. A late one, by Fehling,² gives the following: 1. Resorption fever of the puerperium, ulcera puerperalia, colpitis puerperalis. 2. Endometritis and metritis puerperalis. 3. Parametritis puerperalis. 4. Peritonitis universalis. 5. Pelveoperitonitis circumscripta (perimetritis). 6. Lymphatic form of puerperal fever. 7. Metrophlebitis with thrombophlebitis. 8. Pyæmia. 9. Endocarditis puerperalis. 10. Puerperal erysipelas. 11. Gonorrhœal diseases of the puerperium. 12. Scarlatina puerperalis. 13. Tetanus puerperalis.

Post-mortem, Fehling distinguishes putrid and septic endometritis as follows: In the former the mucous membrane of the uterus is necrotic, and beneath this is a cellular infiltrated zone 3.5 mm. thick, beyond which no micro-organisms are found. In light forms of septic endometritis the picture may be the same, but in severer forms the cellular zone is thin and the micro-organisms have penetrated it.

The etiology of all the morphological and bacteriological forms above mentioned is very evident. The first and second may be due to putrefaction of remains left in the uterus, or non-specific slight ulceration, or, finally, to the ordinary micro-organisms, the streptococcus, the staphylococcus, and the bacillus coli communis; all the others, except the last four forms, which are specific in their nature, may be due to any of those micro-organisms. At one time the gravest and most fatal cases were attributed always to infection with streptococci, while the lighter cases were considered due to staphylococci. At

¹ *Lancet*, July 9, 1898.

² *Die Physiologie und Pathologie des Wochen betes*, Stuttgart, 1897.

the present time, although this is considered true, as a general rule, it is by no means absolute. All manner of light cases have been reported in which streptococci alone, or mixed with staphylococci, were found, and many fatal cases have been observed in which only staphylococci were present.

Strünckmann¹ has collected from the literature twenty-four fatal cases of pure staphylococcal infection, to which he has added one of his own. But besides these two kinds of micro-organisms many others have made their appearance in pure culture, to account for serious and at times non-serious cases.

Strünckmann has collected nineteen cases due to the bacillus coli communis, three of which ended fatally.

Williams² gives the following as the cause in a series of cases where the temperature went above 101.4° :

Streptococcus, 8 cases ; staphylococcus, 3 ; colon bacillus, 6 ; gonococcus, 2 ; anaërobic bacilli, 4 ; unidentified anaërobic bacteria, 3 ; diphtheria bacilli, 1 case ; bacillus aerogenes capsulatus, 1 ; streptococcus and colon bacillus, 1 ; staphylococcus and colon bacillus, 1 ; staphylococcus and streptococcus and typhoid bacillus and unidentified anaërobic gas-producing bacillus, 1 ; cultures and cover-slips negative, 11 cases.

This is very similar to the report previously made by Krönig in 200 cases, the anaërobic bacteria being quite prominent in both tables, though the rôle that they play still remains undiscovered. The gonococci, too, present themselves in about the same proportion in the two reports. Besides these organisms many others are found as causes for individual cases. Kühn³ mentions four undoubted cases due to the tetanus bacillus. In one case he thought the infection came from the straw of the bed, which he found to contain the organisms. Schuhl⁴ mentions three cases due to the pneumococcus.

Diphtheria of the puerperal genital tract is assuming gradually a more prominent place, since ready means of absolute diagnosis have made their appearance. The following, related by Croffi,⁵ is an example of a case : Three days after a normal birth the symptoms began with fever rising rapidly to 104° F., accompanied by oedema of the vulva and vaginal ulceration, the ulcers being covered with a white membrane. The history showed that the patient had been associating with several diphtheria-sick children, and gradual injections up to 70 c.c. diphtheria

¹ Berlin, 1898, S. Karger.

² American Journal of Obstetrics, 1898, vol. xxxviii., No. 31.

³ Berlin. klin. Wochenschrift, 1898, Nos. 28 and 29.

⁴ Revue instruct de Med. et de Chir. Prat. 1897, No. 22.

⁵ Gazz. deli. ospedali, Neapel, 1897, No. 67.

antitoxin were given, with the result that the fever decreased, the membrane disappeared, and complete recovery followed. In the membrane Loeffler's bacilli were found.

DIAGNOSIS. We have as yet no decisive method of finding what germs are the cause in an individual case better than by examining the lochial discharge, or, best of all, a culture from the uterine mucous membrane. In severe cases, especially of pyæmia, one would think that a culture of the blood might be useful in leading to decisive results, but cultures from the blood have not been very satisfactory, and comparatively little has been written on the subject since the more or less contradictory results of Petruscky¹ and Grawitz,² in 1894. The former in fourteen cases obtained the streptococcus eight times and the staphylococcus aureus once, the result being negative in the remaining five cases. Grawitz got a negative result in all of a large number of cases except three.

TREATMENT. Prophylaxis. The prevention and the treatment of childbed fever will always be the most important study in obstetrics. Laboratory and clinical investigations are ever adding to our knowledge of this subject, and it is gratifying to note that recent bacteriological studies are more and more in harmony with bedside observations. In obstetric practice, just as in other surgical work, the bewildering and irksome technique of the early antiseptic era has steadily given way to the clear principles of asepsis. The current year has been especially characterized by reports from all quarters that emphasize the necessity for abandoning the notion that in the unstinted use of germ-destroying solutions puerperal infection might be avoided or successfully treated.

The prevention of puerperal infection is now thought to be best accomplished not by frequent vaginal douches with antiseptic solutions but by the application of these three principles of asepsis: (*a*) For vaginal douches the substitution of thorough cleansing of the external genital organs, paying especial attention to the labial folds and to the vaginal introitus; (*b*) limitation, as far as possible, of the number of vaginal examinations; (*c*) painstaking hand sterilization—the method and the time consumed being the same as for the gravest surgical operation. Since the contradictory results obtained by Gönner and Döderlein from their bacteriological studies of the vaginal secretions of pregnant women, each year has shown additional studies by many capable investigators, but with results so contradictory that they could not be relied upon to determine the real value of routine vaginal douches. Influenced by the earlier reports of frequent vaginal douches employed routinely before and after labor, many men in general practice continue their use, and apparently are unaware of the latest conclusions reached

¹ Zeitschr. f. Hygiene, 1894, vol. 17.

² Charité Annalen, 1894, vol. xix.

alike in the laboratory and in the hospital. In his very valuable paper¹ Williams gives a résumé of the work that has been done.

From the results with improved technique in bacteriological manipulations, in order to remove every possible source of contamination, it appears that the vaginal douches, before and after labor, are not indicated, because they are not necessary, because they remove the natural vaginal secretion which itself has bactericidal powers, and because they lessen the vital resistance of the tissues. The statistics of Leopold and Mermann, of Goldberg, of Fischel, and of others, of cases treated with and without douches, show a morbidity and mortality rate in favor of the latter. There are, however, those who yet claim that the clinical evidences are too contradictory to finally settle this much disputed question. Kalmus² says: The vital question in the world of obstetrics at present is that of vaginal disinfection. In spite of the amount of work done in the last years, it is still *sub judice*. One considers that disinfectants are absolutely necessary, another that they are injurious. It must certainly be granted that it is doubtful if complete disinfection of the vagina is possible. No disinfectant can entirely clear away the mucus secretion of its wall, and no matter how energetically the disinfectant has been used all the niches of the glands cannot be reached. Bacteriological examinations have made it probable that the vagina under normal conditions contains no pathogenic micro-organisms, and that the vaginal secretion, especially during pregnancy, possesses a germicidal power which can destroy in a comparatively short time micro-organisms introduced from the outside, except the gonococcus, at least in forty-eight hours. Krönig found that the staphylococcus pyogenes aureus introduced would be destroyed. If he disinfected the vagina in this attempt with 1 : 1000 sublimate or 1 per cent. lysol, these cocci remained several hours longer—even longer still when the disinfectant was used before the introduction of the cocci. According to this, one must consider the disinfectant as harmful rather than useful. The theory remains worthless if the practice does not correspond with it. Statistics can bring the one perfect proof, and if we look at these statistics we find the remarkable fact that they neither confirm nor contradict the bacteriological findings. Some point one way and some another. In some lying-in hospitals control attempts have been made, inasmuch as from a great number of pregnant women one-half were treated with disinfectants, the other half treated without. In all these statistics the patients were considered sick who showed a temperature over 38° C., even when this was observed only once. If we compare the reports we recognize that they do not all agree, but too often contradict one another. Ahlfeld

¹ Loc. cit.

² Centralbl. f. Gyn., 1898, No. 19.

observed, without antiseptics, 41 per cent. morbidity, with antiseptics, 38 per cent. Steffolk without, 19.4, with, 6.5 per cent.; Hofmeier with, 9.2 per cent.; Krönig without, 25.9 per cent., with, 36.2 per cent.; Leopold without, 9 per cent. and 17.2 per cent.; with, 20 per cent.; Meermann without, 7 per cent. Where are we to find the cause for this difference? They accuse one another of inexactness in taking the temperature, and Leopold accuses the others of want of asepsis. Sarwey seeks the clearing up in the manner of taking the temperature, and suggests anal measurements. Burekhardt says that the predisposition to rise of temperature is different in different patients, that one patient is much more ill with a slight degree of temperature than another with a higher degree; that, therefore, the determining of a certain temperature to be the degree of the disease is not right, and it is possible that the unhealthy cases of the different hospitals agree really more than the statistics show. Hofmeier says that the mistake lies in the fact that the disinfectants used were different; and, second, that in the tests made the patients responded in a different way; moreover, in the university hospitals the patients were used for the purpose of study, and in others, as at Dresden and at Mannheim, they were not. The latter, therefore, are less liable to infection during delivery than the former. Then for the control attempts only cases with normal appearing secretion were employed. Kalmus confesses that all these considerations offer some explanation of the difference in the statistics, and if carefully analyzed the results would be less contradictory. He adds that if the temperature-taking was done according to his method the statistics would be found to agree better, too. He contends that in all lying-in hospitals the temperature is only taken twice during the day—in the mornings between 7 and 8 o'clock and in the afternoons between 5 and 6. If now it can be proven that the temperature reached its highest at the forenamed afternoon hour it would be well, but there are many exceptions to this. In an examination of three hundred patients, he found 22.4 per cent. to have the highest temperature at noon, not at 5 o'clock in the afternoon; and, again, 49 per cent. to have the highest temperature between 9 and 10 in the evening. He, therefore, advises temperature-taking four times daily—morning, noon, evening, and night.

While it is true that these statistics are contradictory, the clinical evidence that has accumulated, showing that douches are not only unnecessary but are even harmful, is in accord with the most recent bacteriological studies, and should, therefore, influence the general practitioner to abandon routine douching.

Frequent examinations and infection conveyed by the hands or the instruments of the doctor or the nurse are the remaining obstacles to a

perfect asepsis. As Shears¹ aptly remarks, a very large proportion of the cases seen by the general practitioner are cases of normal labor in multiparae that would get along perfectly well without any active interference whatever. Many of them when first seen are so far advanced in the second stage as to have passed the time for most complications, and it is certainly deplorable that cases of this kind should become septic from unnecessary manipulations. Admitting that in general practice many cases require a vaginal examination for one reason or another, it is a safe rule to follow that there is seldom occasion in normal conditions for more than one or two internal examinations at the most during the expulsive stage. From the beginning of the cervical dilatation until long after delivery we have a surface favorable to the direct absorption of septic matter. How inconsistent, then, to preach asepsis in obstetrics, and at the same time advise, as part of the treatment of normal cases, the frequent introduction of the one instrument which we cannot sterilize—the hand—and the use of douches which serve only to interfere with the conservative and reconstructive processes of nature! One cannot look over the obstetric literature of the day without the reflection that too large a proportion of it is devoted to the study of abnormalities and too little to the study of normal labor. It is unreasonable to suppose that the same examinations and manipulations are necessary in all cases. A sharp line should be drawn. Abnormal cases should be treated promptly and fearlessly, and normal cases should be let alone. They are dangerous only through unnecessary interference.

To one engaged in obstetric practice it should be a matter of conscience and instinct to avoid contact with septic material. The inefficiency of any method of sterilizing the hands when contaminated induced the writer² to urge the practical value of wearing seamless rubber gloves, sterilized by boiling, whenever a septic case is to be treated or examined, or when, for one reason or another, it is necessary to make repeated examinations or perform the ordinary obstetric operations. The practical value of rubber gloves in surgery is well known, and it is the writer's experience and conviction that they have a special field of usefulness in obstetric practice.

Döderlein³ has for some time caused rubber gloves to be used by all who make vaginal examinations during labor. The results have been most satisfactory—lower puerperal temperature, shorter recovery, and less and cleaner lochia. The advantages of the use of gloves are (1) they are impermeable; (2) they are easily sterilized in steam, boiling—

¹ Medical Record, September 17, 1898.

² Philadelphia Polyclinic, October 15, 1898.

³ Centralblatt für Gynäkologie, 1898, No. 26.

water, or antiseptic solutions ; (3) when wet in 1 per cent. lysol they are smoother than the hand ; (4) they are not so expensive that they cannot be used. The gloves are boiled for half an hour and then placed in 1 per cent. lysol. The hands are first sterilized as carefully as possible, the gloves are filled with 1 per cent. lysol, and a glove is put on the hand used in examinations.

General or Constitutional Treatment. A saline purge should always be given immediately after the early disinfection of the parturient canal. Free catharsis is nature's way of draining the pelvis of the products of infection, and is to be utilized, but only at the beginning. When the infection has existed several days and the patient's strength is thereby reduced, free catharsis will do harm by further reducing her vital force. Next in importance to easily digested and concentrated food, given in as large a quantity as the stomach will digest, is the free use of stimulants—alcohol in large doses, but not enough to produce its untoward physiological effects ; digitalis, quinine, and strychnine should systematically be employed, and in the emergency of imminent heart failure inhalations of oxygen, carbonate of ammonium by the bowel, and nitroglycerin hypodermatically should be used.

The problems in the treatment of puerperal infection that have attracted most attention during the current year have been the studies in serum-therapy, the resort to abdominal and pelvic surgery for the prompt and radical treatment of early and grave infections ; the use of nuclein and other means to promote leucocytosis, and thus to fortify the patient's resistance against invading poisons ; the employment of hypodermoclysis ; and, finally, a more correct knowledge of the limitations and dangers of the uterine curette.

Since April, 1895, when antistreptococcic serum was used successfully in a case of puerperal septicaemia in the Paris Maternité, the reported results have been most variable. During the past year isolated cases have been recorded, with excellent results claimed ; but close study of many of the cases, and the employment at the same time of other well-known methods of treatment, cast discredit upon the real curative value of the serum. At the meeting of the American Gynecological Society, held at Boston, May 26, 1898, Fry presented the results obtained from correspondence with nineteen prominent obstetricians in America, who had used the serum treatment for puerperal infection. Of eighty-three cases the result was said to be good in ten, in eight it was decidedly negative, and in sixty-five it was considered to be doubtful. Wallich,¹ after careful examination to determine whether Marmorek established and demonstrated that antistreptococcus serum is a powerful prophylac-

¹ Centralblatt für Gynäkologie, August 7, 1897.

tic or healing medium against puerperal infection, concludes that the mortality, after a methodical use of Marmorek's serum, remains substantially unaltered. Notwithstanding the increase in the amount of fluid injected, even to 750 cubic centimetres, he still found no reason for altering the hitherto customary method of treatment for puerperal infection. Pinard, however, saw better results in the year 1897 from the use of Marmorek's serum than in the year preceding. Weinstein injected cats with the serum after having previously introduced streptococcus cultures within the cavity of the uterus. He concluded from his experiments that the serum acted more as a prophylactic than as a curative remedy, and that large doses and very early treatment are necessary. Samschin, von Ott, La Torre, Carbajal, and Pinard participated in the discussion. They mostly agreed with Wallich, that the streptococcus serum has not yet been sufficiently tested, and that as a means of cure it cannot yet be recommended. At a meeting of the Philadelphia Obstetrical Society¹ seven cases were reported and a collection of twenty-one other cases was made, with a mortality of 25 per cent. At the last meeting of the American Gynecological Society (May 24, 1899), a committee appointed the preceding year to investigate the treatment of puerperal sepsis with antistreptococcic serum made an exhaustive study of all reported cases, and the conclusions of that committee agree that the serum treatment of puerperal sepsis is not to be relied upon and needs further laboratory investigation before it can be recommended for general use. So far as serum-therapy has been studied, it may be said that its usefulness has not been demonstrated, and that its administration is not free from danger.

The experience the writer has had with the serum-therapy of puerperal infection, and his knowledge of the results obtained by others, induces him to formulate the following rules to guide one in selecting cases appropriate for this method of treatment. While a careful and early bacteriological study of the secretion from infected areas in the vagina, the cervix, or the endometrium is in progress, the patient should be subjected to the usual antiseptic and stimulating treatment. When the streptococcus is found unassociated with other pathogenic microorganisms, Marmorek's or other equally reliable serum should be administered in doses of at least ten cubic centimetres daily for three days. When wide-spread systemic infection has occurred, a condition of affairs recognizable clinically by the severity of the symptoms, it were folly to hope to save life by serum injections. The successes claimed for serum-therapy have been in cases promptly treated before the patient is overwhelmed. It is well known that streptococcus infection is by far the

¹ American Journal of Obstetrics, vol. xxxv., pp. 625-650.

most frequent form of infection in the grave cases of puerperal infection, some investigators placing the frequency at 94 per cent. Other virulent micro-organisms are, however, frequently associated with the streptococcus, and the serum cannot, therefore, be used to combat these cases of mixed infection. To employ the serum in a scientific manner, a bacteriological examination by means of the cover-slip preparation and by culture should be made. The inherent difficulties and delays incident to such examinations, especially in the hands of general practitioners, emphasize the belief that the serum treatment of puerperal cases can never be so practically efficient as the antitoxin treatment of diphtheria. The future must determine the true value of the serum-therapy of puerperal infection.

THE USE OF SUBCUTANEOUS INJECTIONS OF PHYSIOLOGICAL SALT SOLUTION. Another means of combating septic conditions is the subcutaneous and intravenous injections of normal salt solution. It has not as yet been definitely determined how the salt solution thus administered helps to combat sepsis. One theory is that it increases leucocytosis, and another is that when used in large quantities and frequently repeated a veritable lavage of the blood is obtained, and with the diaphoresis and increased action of the kidneys thereby obtained, the removal of the poisonous products accumulated in the blood and tissues is assisted and hastened. It has been proved experimentally that a combination of normal salt solution with a definite portion of calcium and potassium, known as Ringer's fluid, is more efficient than the normal salt solution. Locke has recommended a modified Ringer's fluid, the formula of which is 0.25 gramme of calcium chloride, 0.1 gramme of potassium chloride, 9.0 grammes of sodium chloride in one litre of water. This fluid may be injected intravenously in quantities of 500 to 2000 cubic centimetres, although subcutaneous and rectal injections will usually suffice and are not attended with the dangers of intravenous injections. Clark¹ advises that the injection be made underneath the breast. The procedure is as follows: The mamma is lifted from the thorax, an aspirating needle forced in under the gland, and about one litre of normal salt solution allowed to flow in by gravity. He reports this typical case of septic infection: The patient was in extremis, but after the first injection the pulse improved, the stupor disappeared, and she felt so improved herself that she asked for a repetition of the injection the next day. It was repeated in all seven times, with the result of a perfect recovery. Eberhart² recommends it especially in the septic form of puerperal fever, particularly when it is associated with vomiting

¹ American Journal of Obstetrics, June, 1897.

² Seventieth Versamml. deutsch naturforsch. u. aerzte zu Düsseldorf, September 19-24, 1898, reported by Cent. f. Gyn., 1898, No. 41.

in which every swallow of a fluid starts again the vomiting, and the body tissues consequently become poor in blood. This infusion (one litre at a time) has chiefly a diuretic effect. It aids in the elimination of the bacteria and their metabolic products, and the noxious materials in the blood itself are diluted so that they do not come in too great concentration to the kidneys.

Ostermayer¹ reports the following case: The physician was first called on account of hemorrhage, but the woman developed jaundice and periostitis of the alveolar process of the superior maxilla. Vomiting was frequent, the pulse 110 to 140, and the gravity of the case was further shown by an exanthematous eruption, diarrhoea, and a temperature of 38.5°, which gradually sank to 35.9°. On the eighteenth day, after all hope had been given up, he injected 300 centigrammes of normal salt solution morning and evening. Improvement was evident from this time, and after thirteen injections had been given the patient was convalescent.

It is the opinion of many pathologists that recovery from septic diseases is largely due to the phagocytic action of the white blood-corpuscles, and in consequence of the leucocytosis repeatedly observed in septic conditions when blood examinations have been made, several means have been devised to produce leucocytosis, in order that the number of corpuscles, increased artificially, should fortify the patient against the invading poison. The most important of these means, at least to the obstetrician, is nuclein. The pathological theory upon which its use is based has been sufficiently substantiated to warrant the administration of nuclein as an adjunct to other treatment. The 5 per cent. solution may be administered in drachm doses by the mouth every fourth hour, or, preferably, as recommended by Vaughn, as much as eighty minimums daily may be given hypodermatically.

LOCAL TREATMENT. *Curettement.* Within the past few years there has appeared a reaction against the curette used for puerperal sepsis, and this reaction has been beneficial since we have learned that every case of childbed sepsis cannot be cured or even be benefited by routine scraping of the uterus. The dangers of perforating the wound, of carrying infection into the uterus through ignorant and faulty technique, of opening new avenues for absorption of toxic agents already present in the uterine or vaginal canal, of destroying the lymph-barriers erected by nature to cut off lymphatic or circulatory absorption—all these dangers have been freely discussed, but they should not deter us from utilizing a most valuable means of treatment at the *right time* and in the *right manner*. My experience with this class of cases has taught

¹ Centralblatt für Gynäkologie, 1899, No. 12.

me that the curette accomplishes the best results in puerperal sepsis only when it is used early and thoroughly. With the first symptoms of infection—an ill-smelling discharge or an elevated temperature or a rapid pulse, not otherwise accounted for—the uterus is digitally examined, under ether if necessary, and always with most rigid antisepsis. Infected wounds of the vagina, of course, must not be overlooked. The finger will tell you where to use the curette, and it should be an inflexible rule of practice only to scrape where the finger has found decidua or placental excrescences or areas of soft and perhaps necrotic tissue. Curettage of the uterus properly performed at this early stage of infection, preceded and followed by irrigation with very large quantities (a gallon) of sterilized or, if you choose, antiseptic fluid will accomplish good results. For cases of puerperal sepsis further advanced than those just mentioned, is the curette to be employed, or is it not only useless but even dangerous? A. Chrobak¹ says: "I have seen in consultation practice in the past year more serious disease as a result of inconsiderate and ungrounded curettements than puerperal deaths. I speak against it not alone on account of the danger of perforation, but because the curette removes not only a part of the mucous membrane, leaving behind sufficient for regeneration, but because in the puerperal uterus the curette sinks deeper and removes the fundi of the glands and sometimes even pieces of the muscle wall; and even all these dangers disappear in the presence of the fact that the curettement of the puerperal uterus opens again numbers of already thrombosed bloodvessels, that protecting granulation wall which nature has set up, and presses into the now open veins the purulent thrombi and infected tissue particles." He says it may occasionally, after mature deliberation, be found necessary to curette, but then let it be done under directions of the fingers, and, if possible, let the finger remove what is to be removed. Mundé² likewise believes that the curette does more harm than good, on account of the removal of the tissues, the vessels of which have already undergone inflammatory obliteration, and are, therefore, no longer a source of infection. He advises instead, in cases of puerperal endometritis, the application through a cylindrical speculum of zinc chloride, 20 to 30 per cent., or pure tincture of iodine, followed by a douche of sterile water and a tamponing with iodoform gauze.

The degree and kind of infection and the local pelvic condition of the patient help to answer this question. When the infection has spread beyond the parturient canal and has invaded the lymphatic or venous channels, the employment of the curette comes too late to achieve its greatest value. But clinically we cannot always be sure that it is too

¹ *Monatschr. f. Geburtsh u. Gynäkol.*, 1899, Band ix., Heft 4.

² *American Journal of Obstetrics*, 1898, vol. xxxviii., No. 1.

late, and, therefore, its routine employment is desirable, except in cases where the finger finds the endometrium smooth or in cases evidently saturated with poison and necessarily fatal. Heretofore several varieties of septic endometritis have been described, such as catarrhal, purulent, diphtheritic, dissecting, and gangrenous. Döderlein has simplified this matter by describing two varieties: the putrid, due to saprophytes, and the septic, due to streptococci. For the former the curette is always efficient, for the latter its usefulness is limited largely to its early and prompt employment with a technique capable of preventing interference with nature's effort to localize the disease. I refer to a digital examination of the uterine cavity and to avoid scraping uninfected areas of the endometrium. It is the last-named variety that often requires frequently repeated irrigation of the uterus for several days following the curettement.

The trend of recent writings is that the curette does more harm than good in endometritis due to streptococcus infection. It is certainly true that in that variety of infection the micro-organisms rapidly invade the uterine tissues and soon pass beyond the reach of the curette and douche. When a bacteriological examination reveals a pure streptococcus infection and the finger in the uterus finds the smooth endometrium so characteristic of pure streptococcus infection, it is useless to hope for any results from the employment of the curette. Many cases, however, cannot be bacteriologically examined, and many cases are mixed infections, with more or less débris in the uterine cavity. It is, therefore, often an impossibility to differentiate the kind of infection, and as a working rule it is my conviction that the employment of the curette must be decided by a digital examination of the endometrium when a skilled bacteriological examination is not to be obtained.

Uterine phlebitis is aggravated by the curette. Indeed, a rapid rise in the temperature, a severe chill, and an increased rapidity of the pulse following the use of the curette, aids in the diagnosis of the uterine phlebitis, along with other symptoms, such as the late appearance of the fever, the absence of pelvic pain and tenderness, the severity and frequent repetition of the chills, the marked remissions in the temperature-curve, and the appearance of metastasis, especially as a septic pneumonia. Finally, the local pelvic condition will sometimes contraindicate the use of the curette. When the tubes, the ovaries, and the connective tissue or the peritoneal cavity contain pus, it is certain that the curette is not to be considered, and that more serious surgical measures are required.

Capillary Drainage. Of the various measures employed in the treatment of puerperal endometritis, Gouzartschick¹ advocates tamponing

¹ Journal d'Obstet. et de Gyn., February, 1898.

alone under the name of capillary drainage, and records 115 cases so treated, all of which recovered with one exception. The procedure is as follows: The cervix is exposed by a speculum and seized with a vulsellum, and the uterine cavity is swabbed out with bichloride solution. A tampon soaked in the same solution is carried to the fundus uteri by sponge forceps, and the vagina packed with iodoform gauze. Each tampon remains for twenty-four hours, when it is removed and a fresh one inserted. If the temperature rises the tampon is removed earlier and replaced by a fresh one. The average length of treatment is ten days. The author claims the following advantages for his method: (1) It is easily applied; (2) all the necrotic tissue is removed on withdrawing the tampon; (3) the tampon acts as a capillary drain, thus favoring the escape of all discharge from the uterine cavity. The only contraindication to this mode of treatment is the presence of inflammation of the appendages or cellular tissue of the pelvis.

The value of gauze as a drain in the uterine cavity is by no means admitted, and the danger of allowing necrotic tissue to remain in the cavity of the womb for ten days, the average length of time required for the treatment under this plan, is more dangerous than a careful curettement.

Vaporization. Within the last couple of years a rather new procedure has been advocated by the Germans, under the name of vaporization, for puerperal as well as other forms of endometritis. It consists in cauterizing the interior of the uterus by streaming steam. First advocated by Sneguirjeff as a hæmostat, its sphere of usefulness broadened, until now it is employed by some in most of the intra-uterine conditions as a stimulant in subinvolution, as a hæmostat in hemorrhage, and as a caustic and antiseptic in all forms of endometritis. Its most general employer is Pineus,¹ who has invented a special instrument for carrying out the procedure. This consists of a kettle, with a valve which regulates the pressure; a thermometer is adjusted in the kettle, and there is another opening for the attachment of a rubber coil. The rubber coil is attached to a metal tube, which is small enough to fit inside a metal catheter. That gives a double tube, the outer of which is cold, and there is also space between the inner and outer tubes for the return flow of steam. This is called a uterus-vaporizer. He has a second model, in which the steam does not come in contact with the part, but the steam flowing through a closed catheter keeps it at the temperature wished. This, which he says is nothing more than a "heatable" sound, he calls a "uterusvapocautery." He claims this latter to be as effective as a thermocautery, with a much wider sphere of usefulness. In puerperal endometritis and in sapremia (putrid) after abor-

¹ *Centralblatt für Gyn.*, 1898, Nos. 10, 22, and 78.

tion, he has found both instruments useful, either one bringing about cure. In using the vaporizator he recommends for endometritis steam at a temperature of 102° C. for one-half minute, or in cases of sapremia for one-quarter minute, followed by a cleaning out of the clots and an immediate subsequent steaming for one-quarter to one-half minute. Kahn¹ believes that Pincus employs the steam at too low a temperature. He advocates 110° C. to 112° C. for one-half minute and employs an ordinary apparatus made by himself. Pincus insists on protecting the cervix from contact with the instrument; Kahn denies that it is necessary. Fenomenou² also employs an apparatus, made by himself, an ordinary kettle, that can be hermetically sealed, to which is attached a rubber tube with a catheter. The kettle has a safety valve. He prevents burning of the vagina by allowing a continuous stream of cold water from another source to flow in. He agrees with the two previous authors, that the operation may be done without anaesthesia. He claims that bacteriological examination of the uterine cavity after vaporization always reveals it to be sterile.

Dührssen³ advocates an instrument, made by himself, the tube of which is of a material that is a bad conductor of heat. All report the effect to be almost immediate; the septic material, especially the micro-organisms themselves, is destroyed, the uterus contracts, the temperature falls, and the general condition improves at once. The number of cases operated on is yet too small to say whether it is under all circumstances safe, and whether or not bad results may follow. In two cases where vaporization was done for menorrhagia by Baruch⁴ and Weiss,⁵ complete obliteration of the cavity of the uterus followed. Van de Velde⁶ reports a case done for the same purpose, where death ensued, caused by a perforation of the uterus after vaporization, carried out for one minute at 105° C. Two days after the vaporization the temperature began to rise, and four days after the operation the patient died, with symptoms of peritonitis. He explains the perforation as follows: The vaporizator was introduced until its end nearly came in contact with the fundus. During the vaporization the uterus contracted so hard that it pierced itself on the immovably held vaporizator. He is afraid of this method, and thinks the curette safer.

Silver Ointment. A novel treatment for puerperal sepsis has been recommended by Credé,⁷ who claims rather remarkable results from the employment of a silver ointment. This ointment is put up in small

¹ Centralblatt für Gynäkologie, 1898, No. 23.

² Ibid.

³ Berl. Medicin. Gesellsch., January 18, 1898; reported by Monatsch. f. Geburtsh. u. Gynäk., 1899, Band ix., Heft 3.

⁴ Centralblatt für Gynäkologie, 1898, No. 5.

⁵ Ibid., 1898, No. 24.

⁶ Ibid., 1898, No. 52.

⁷ Archiv f. klin. Chir., 1898, Band lv., Heft 4.

packets, each one containing 1 to 3 grammes of metallic silver. The skin is washed and one of these rubbed into it for fifteen or thirty minutes. He affirms that in staphylococci and streptococci fever and infection, the effect on the general condition is surprising, and that the local process is also influenced. He recommends it in any septic condition.

SURGICAL TREATMENT. Turning to the grave surgical problems of the puerperal period, the kind of cases that require the surgeon's aid will briefly be discussed. Since Tait advised and practised opening the abdomen for puerperal sepsis not more than a decade has passed; nevertheless, the value of such a measure is established, and increasing experience is making clear the indications and contraindications of cœliotomy in recent septic cases. Experience has shown that abdominal section for diffuse suppurative peritonitis following childbirth is usually a failure, and that operation by the vaginal as well as by the abdominal route, when performed early, is usually successful for localized pus collections in the peritoneal cavity or in the tubes, ovaries, or pelvic connective tissue. Within the past four years hysterectomy has been proposed for two classes of cases of puerperal sepsis. One class comprises all cases of pelvic infection, where, after the removal of a tubal or ovarian abscess, there will be left behind in the pelvis infected and infiltrated broad ligaments, or a uterus containing areas of infection or suppuration, which finally either spreads to the peritoneum and causes a fatal peritonitis or which permits septic absorption to continue until the patient succumbs. The other class comprises early cases of grave infection, going from bad to worse under the usual treatment by curettage, irrigation, and stimulants, in which cases there are no physical signs indicating that the local septic process has spread beyond the womb, and for which immediate hysterectomy is performed (usually within the first week after delivery), in order to abruptly terminate septic absorption in time to save the patient's life.

It is usually not difficult to decide for or against puerperal hysterectomy after one has opened the abdomen for pelvic inflammation following labor. The great difficulty is to decide whether a beginning case of puerperal sepsis should or should not be subjected to so grave an operation. The operations performed for early puerperal sepsis have been so few that it is impossible to formulate a definite rule of action to guide us in the management of these cases. With the knowledge of this important subject now at hand, my own course in a given case is about as follows: With the first appearance of rapid pulse, chill, fever, offensive discharge, and abdominal tenderness, a careful examination of the parturient tract and adjacent structure is made. If indicated, the uterus is carefully and thoroughly curetted, irrigated, and lightly packed with iodoform gauze, and free catharsis is obtained by salines. If within

a day or two the patient has grown steadily and rapidly worse, and there are physical signs of inflammatory material within the pelvis or abdomen, further delay in opening the abdomen is dangerous, and when opened, if the uterus or broad ligament shows pus collections or infected areas, hysterectomy is performed. When the septic inflammation is confined to localized areas within the peritoneal cavity, or to the tubes and ovaries, irrigation and drainage are enough for the former and salpingo-oöphorectomy for the latter. Should the very rare extraperitoneal collection of pus within the folds of the broad ligament be encountered, the abdomen is closed and the abscess is evacuated and drained either through the vagina or over Poupart's ligament.

Thus far reference has not been made to operative treatment that is sometimes necessary for a sharp attack of peritonitis, due to the bruising or tearing during labor of inflammatory material or tumors, whose presence in the pelvis antedated labor. These cases are to be dealt with according to the recognized principle that pus should be removed whenever and wherever found. In view of the prevalence of pelvic inflammatory disease, at first thought it is surprising that this origin of puerperal inflammation is not more frequently observed, yet the rarity of these cases is extreme, and can only be explained by the sterility which accompanies tubal and ovarian diseases. It is my opinion that operation by the vaginal route is to be preferred in the class of cases at present considered, and when localized sepsis follows abortion (in which latter cases the inflammatory material is likely to be localized lower in the pelvis than after labor at term), when celiotomy offers a distinct advantage for diagnosis and for treatment if the patient's general condition will permit opening the abdomen.

PUERPERAL COMPLICATIONS.

Puerperal Hemorrhage. HYDRASTIN AND STYPTICIN. In 1895 Gottschalk¹ called attention to a new drug, which, on account of its hemostatic qualities, he designated stypticin. Chemically it is cotarnine hydrochlorate ($C_{12}H_{14}NO_3Cl$)—a yellow crystalline powder, soluble in water, and of a bitter taste. Freund² advises its administration in tablets containing 0.05 gramme (4-5 grain), five or six tablets making a daily dose. Boldt³ recommends it in single doses varying from $2\frac{1}{2}$ to 5 grains, or as an injection in urgent cases in 1 to 3-grain doses in 10 per cent. solution. Rouse⁴ made a comparative physiological and therapeutical

¹ Therapeut. Monatsheft, Berlin, December, 1895.

² Monatsschr. f. Geb. u. Gyn., 1899, Band ix., Heft 3.

³ Medical News, 1899, vol. xiv.

⁴ Archiv. Internat. de Pharmacodynam., 1898, vol. iv., Nos. 3 and 4; vol. v., Nos. 1 and 2.

study of it and hydrastin hydrochlorate. He contends that stypticin has a slow tonic effect on the heart, and is of great value after serious hemorrhage, in assisting the heart to regain its normal tone. It has no vasomotor effect on the abdominal or uterine bloodvessels, though it stimulates uterine contractions. Hydrastinin hydrochlorate acts more quickly, but its action is dissipated sooner; it contracts the uterine and intestinal bloodvessels, and likewise aids uterine contractions. The author, therefore, believes that in metrorrhagia due to post-partum atony or retention of placental remains both drugs would be useful, but hydrastinin is to be preferred.

In Boldt's¹ series of cases he found stypticin to have excellent effect in irregular hemorrhage during pregnancy, or during the puerperium without retention of placental remains, in subinvolution or following curettement for retained particles or hemorrhage due to pelvic inflammation after delivery; but it was useless in hemorrhage due to retention of parts of the placenta. He never saw unpleasant symptoms follow its use, even after doses of $4\frac{1}{2}$ grains, and found no oxytoxic properties. Freund,² Gottschalk,³ Braitenberg,⁴ and Nassaner⁵ practically agree with Boldt's conclusions. Rousack⁶ recommends hydrastinin in like cases of post-partum hemorrhage.

TAMPONADE OF THE UTERUS. There have been proposed several new methods of aseptic tamponade, without the aid of assistants, one of which is by Schwarzenbach,⁷ who uses a special tenaculum and speculum. The latter is a funnel-shaped metal one with the following measurements: Length, 10 cm.; circumference of inner opening, 16 cm.; of outer, 29 cm. The forceps have a small hook pointing away from the handle on each blade, one hook 6.3 cm. from the end and the other 7.5 cm.

In order to tamponade, the speculum is grasped by its large end and pushed into the vagina, a procedure easy and painless, because the instrument is smooth and possesses a much smaller circumference than the child's head (29 cm. to 35 cm.). With the forceps in one hand the anterior lip is grasped (high, in order to avoid tearing) and pulled down, while the other hand holds the speculum. It is pulled down till the small hook on the side of the forceps can catch on the end of the speculum. If possible, it should be brought down to the nearest hook; if not, the forceps is removed, turned, put on again, and the forceps

¹ Loc. cit.

² Monatsh. f. Geb. u. Gyn., 1899, Band ix., Heft 3.

³ Loc. cit.

⁴ Wiener med. Presse, 1898, No. 35.

⁵ Gesellsch. f. Gyn. und Geb. zu München Session, February 6, 1899; Ref. Cent. f. Gyn., 1899, No. 17.

⁶ American Medical and Surgical Bulletin, March 25, 1898.

⁷ Centralblatt für Gynäkologie, 1898, No. 35.

hooked on to the speculum by the further hook. With a second pair of forceps the same is done with the posterior lip, when it will be found that the whole will easily stay in place of its own accord, the os will be as near the vulva as possible, and visible, and the vagina and external genitalia out of the way. Under guidance of the eye the gauze is introduced into the uterus, while the other hand grasps the fundus and controls the intra-uterine manipulations, so that the tamponade be carried out exactly. After finishing tamponade of the uterus the forceps are taken away and the vagina tamponed through the speculum.

Oetker¹ has offered another instrument for aseptic tamponade of the uterus without assistance. It is a long (27 cm.), slightly funnel-shaped metal tube, 7 m. in diameter at the small end, 2 cm. at the large end, on the side of which, near the large end, is a projecting link, opening externally and into the tube. This projecting link has a screw internally, which screws over the neck of the flask containing the gauze after the cap of the flask has been unscrewed and removed. The end of the gauze is first pushed through the link into the straight tube, then by a probe-like metal instrument pushed along the tube into the uterus. When enough is introduced the flask is unscrewed and the gauze cut off.

Neuritis. Windscheid² says that the etiology of neuritis gravidarum is not clear, though it is probably toxic, especially in those cases which are associated with hyperemesis. The compression of the nerve-trunks in the pelvis by the growing uterus probably plays a very small part. The clinical picture is the same as that of every neuritis—paralysis with atrophy of the muscles, tenderness of the nerve-trunks, and paræsthesia. It usually disappears after delivery. Puerperal neuritis may have the following causes: (1) Continuation of a neuritis gravidarum; (2) puerperal infection; (3) prolonged pressure of the head in case of weak pains; (4) traction by or pressure of forceps (in 3 and 4 the symptoms are limited to the lower extremities); (5) a form coming after a normal delivery and puerperium, which attacks the nerves of the arm or leg, but sometimes the optic nerve, and here the prognosis is bad; or the neuritis is developed in many nerves at the same time, after the character of Landry's paralysis, in which case the prognosis is even more serious, deaths having been observed. The etiology here is probably also toxic; (6) disinfectants sometimes act as a cause.

Reynolds³ has collected from the literature forty-seven cases, to which he adds two of his own, omitting cases due to lesions of the pelvic trunk during labor. He claims that there are two principal factors in the etiology—sepsis and uncontrollable vomiting. It is more frequent in

¹ Centralblatt für Gynäkologie, 1898, No. 26.

² Graefe's Sammlung Zwangloser Abhandlung., 1898, Band ii., Heft 8.

³ British Medical Journal, October 16, 1897.

multipare, and usually begins with disturbances of sensibility, followed by the motor disturbances. The course often simulates Landry's paralysis. In twenty-five cases bulbar symptoms were present. The paralysis usually began in the legs, and the bladder or rectum were seldom affected. Frequently marked œdema of the paralyzed part was present. Prognostically the most unfavorable cases are those in which the paralysis is generalized; the most favorable those where only the arms are attacked. In 14 out of 49 cases there was very little or no improvement (28 per cent.); in 22 cases recovery was complete (44 per cent.). Histologically the signs of inflammation were found repeatedly in the nerves.

Windscheid advises during pregnancy baths and massage, and, with care, electricity; during the puerperium the last is the most important. In severe cases artificial premature labor may come into question.

In the last two years Brush¹ claims to have seen five cases of puerperal myelitis, the development of the paralysis being slow, the paralytic symptoms manifesting themselves once on the fifth day and three times on the tenth day post-partum. Fever always preceded the symptoms several days, but never severe disease. The delivery of two women was effected by forceps; once a dead child was born, and in two cases large tears of the cervix and perineum were present. He considers it a rare form of sepsis, and finds it scarcely mentioned in the text-books.

Thrombosis and Embolism. Singer² insists that the first symptom is usually increase in the pulse-rate without corresponding rise of temperature. The pulse-rate increases, reaching its height at the time of the greatest extent of the œdema and the appearance of lung symptoms. In uncomplicated cases the temperature rises later than the increased pulse-rate, and returns to normal sooner. If the temperature rises at once with the increase in the pulse-rate the thrombi are usually inflammatory. Of 35 cases observed by the author 23 were of inflammatory origin. In these there also appeared symptoms of puerperal irritation, parametritis, ulcers, and fetid lochia. In 12 cases gonococci were found in the vaginal secretion, 3 times streptococci, 3 times staphylococci, and another time gonococci with streptococci. The 34 per cent. of cases showing gonococci is striking, the whole significance of which we do not understand. The increased frequency of the pulse and the long continuance of this rate are due to the resistance in the circulation that is created by the thrombi, and which gradually disappears as the collateral circulation is established. He lays great stress on the importance of keeping the patient absolutely quiet if any of the preceding symptoms have made their appearance.

Thomas³ gives the following diagnosis between phlebitis and lymph-

¹ Medical News, March 26, 1898.

² Archiv f. Gyn., Band lvi., Heft 1.

³ Zeitsch. f. Geburtsh. and Gyn., 1898, Band xxxix., Heft 3.

angitis of the pelvic organs, and the prognosis and treatment of each: Phlebitis has an active onset, a rapid course, severe symptoms, high fever and chills, purulent vaginal discharge, and the prognosis is doubtful or unfavorable. Lymphangitis has a very gradual onset; there may be little or no vaginal discharge, and if the patient's strength be maintained recovery is the rule. For phlebitis he advises to curette the uterus as soon as possible. For lymphangitis, to cleanse the uterus, but gently, and after this the treatment should be limited to stimulation, local applications of heat and cold, sitz baths, and douches.

Puerperal Pseudo-rheumatism. Perougin¹ concludes, from a bacteriological examination of five cases, that the affection is gonorrhoeal. In one case the disease appeared in the second month after birth; in another forty-eight hours after an abortion; in still another in the fourth month of pregnancy. In two cases the gonococci were present in the joint exudate; in the other cases the diagnosis was made from findings in the genital canal. On account of the small number often present he advises, after Anthony, looking for them in the urogenital tract just after the menses, when they are increased in number by the congestion. He collected forty-two cases of gonorrhoeal arthritis from the literature, and gives the following statistics:

The frequency of gonorrhoeal arthritis in the puerperium is 1 in 500 or 600 cases. It begins usually with severe pain and swelling in several joints, lasting from one to several days, then usually localizes itself in one joint. In 42 cases the joints affected were: 18 times the wrist, 17 times the knee, 9 times the elbow, 2 times the ankles, 2 times the hip, and 1 time the metacarpo-phalangeal joint.

The fever seldom goes above 38° C., and is but rarely introduced by chill and accompanied by delirium, and even here the prognosis as to life remains good, since these symptoms disappear after a few days. The clinical symptoms are doughy swelling of the affected joint, caused sometimes by exudate, sometimes by thickening of the synovial membrane or the surrounding tissue; pain on movement, which quickly disappears after absolute rest; the skin over the joint is sometimes pale, sometimes red, and usually of a higher temperature than on the other side. Differential diagnosis may be necessary during pregnancy from acute rheumatism, which is distinguished by high fever, sweating, reaction to salicylates, and the more frequent participation of the heart, and localization in several joints. In the puerperium it is differentiated from septic fever by the chill and the local symptoms. As to function, the prognosis is bad. Of 42 cases there was ankylosis in 12; in 14 the symptoms were yet present when the patients left the hospital, and only

¹ *Annal de Gyn. et d'Obstet.*, 1898, Nos. 1 and 2.

11 were cured. In one case the joint suppurated, though only gonococci were found in it. Duration: One to six months, exceptionally eight to fifteen days. No case was found where pregnancy was interrupted. Treatment: Rest of joint by plaster-of-Paris bandage; yet passive movements should be begun as soon as possible; this for the plastic form. In the serous and purulent forms he advises operation—namely, puncture with subsequent injections of weak antiseptic solutions. Beside this, local treatment of the gonorrhœa in the genital tract, in order to prevent further infection by the gonococci.

Pelvic Abscess, with Rupture into the Uterus. Gallavardin¹ draws conclusions, from two of his own cases and others taken from the literature, that it usually takes place during the puerperium. The time of rupture ranges from seven days to seven months after delivery. The seat of the abscess was either close to the uterus or in the cellular tissue of the pelvis, or extended upward toward the kidney. The seat of the perforation was usually on the cervix, on the side, a little above the external os, with an opening usually about the size of a finger. Not seldom there were perforations into other neighboring organs. For a diagnosis it is not sufficient to see abundant pus flowing from the os without a vaginal perforation, but the opening itself must be proved by the finger or a sound. Prognosis is unfavorable. The author's two cases and all that he collected from the literature died on account of an extensive, incompletely drained phlegmon, together with which there was tubal or ovarian abscesses or abscesses in the uterine muscle.

TREATMENT. For the treatment of pelvic abscesses discovered or arising during the puerperium, Noble² advises opening and draining through the vagina. He objects to the opening through the abdomen, on account of the liability of peritoneal infection and the necessity of draining it with gauze, carrying with it a predisposition to subsequent hernia. He advises, even in pyosalpinx, the vaginal drainage, and adds that if the interference is early the tube will often return to its original condition.

In acute inflammatory conditions, especially those accompanied by exudate, Pincus³ advises the employment of the position on an inclined plane, with compression (*Belastungslagerung*). The method is as follows: 1. The patient is placed with the pelvis and lower extremities raised (during the day, 20 to 30 cm.; at night, 15 to 25 cm.) above the horizontal. The exit of blood from the lower abdominal organs is thus made easier. 2. By bandaging the lower extremities, this being done daily. 3. By compression from the vagina or rectum on one side and

¹ Lyon Médicale, April 24, 1898.

² Philadelphia Medical Journal, July 23, 1898.

³ Zeitsch. f. Geburtsh. u. Gyn., 1898, Band xxxix., Heft 1.

the abdominal surface on the other. This compression may be continuous or intermittent. It can be used in acute conditions only when fever and pain are made less when the pelvis is raised and compression made; but in chronic conditions it may be continuous, unless it causes pain or an increase of fever.

The treatment of fresh puerperal exudate is as follows: Intermittent "Belastungslagerung," an ice-bag of 2.5 to 5 kg. weight on the abdomen, and internally opium. On the disappearance of peritoneal irritation, instead of opium internally, a Priessnitz plaster, or moist potter's clay, or a shot-bag may be placed on the abdomen, at the same time hot vaginal injections being given. The introduction of the shot-bag into the vagina comes into question only after the hot vaginal injections produce a rise in temperature. In favorable cases the patient can arise on the sixth or seventh day, provided the abdomen is bandaged with a rubber binder. A good "kolpeurynter" is placed in the vagina, and replaced after one or two days by an air pessary. During the night the elastic abdominal binder should be removed and the patient put on an inclined plane, which should be used also several hours during the day. Beside this, forced feeding should be instituted and breathing exercises carried out. If, in spite of all this, the exudate does not decrease, and the patient becomes weaker and weaker, the presence of pus can be relied upon, and surgical interference is called for.

Puerperal Gangrene. Tate¹ collects five cases from the literature and adds a new one. His case was one of premature labor at seven and a half months, immediately preceding which the patient had suffered from a "cold." After some slight premonitory tingling sensations the gangrene began to develop on the seventh day as a bluish patch near each ankle, accompanied by pain. The disease extended to the knee, without showing any line of demarcation; the general condition became very low, and the patient died on the twenty-fourth day post-partum.

Fatal Hemorrhage Due to Phlebectasia of the Uterus and Adnexa. Kaufman² reports a case in a thirty-year-old primipara with twins, in which the birth was so remarkably lengthened on account of the weakness of the pains that finally the first child was extracted with forceps, the second by turning. It was necessary to loosen the placenta manually, when an alarming hemorrhage appeared, which, however, soon ceased. The next day the patient died with symptoms of dyspnea. The section showed cavernously dilated varicose and tortuous veins on the fundus and in the placental site of the body of the uterus. These veins extended from the serous surface of the uterus to the decidua, and were so numerous and close together that there were only a few and

¹ American Journal of Obstetrics, 1898, vol. xxxvii., No. 4.

² Zeitsch. f. Geb. u. Gyn., vol. xxxvii., Heft 2.

very thin muscular fibres between them. Microscopical sections showed this even more plainly. The weakness of the pains was explained by this thinness of the muscle spread so extensively. The dilated veins of the placental site explained the hemorrhage that occurred after the loosening of the placenta, and the subsequent anæmia, with some perimetritis, accounted for the death.

Puerperal Colic Due to Gallstone. Eiermann¹ reports the following quite typical case: The attack appeared with the characteristic symptoms five days after delivery. The next day there developed pronounced jaundice of the skin and conjunctiva, with yellowish-white feces and dark, frothy urine. The jaundice disappeared in eight days and did not recur; no stone was found. He believes that the pressure of the uterus and the disturbance of the circulation during pregnancy lead to stasis of the bile, with possible formation of stone. At birth, when the pressure was suddenly removed, the stone started down the duct. The frequency of the affection is by no means slight.

Sudden Death. Opitz² reported and showed a uterus from a patient who, without any temperature or pulse symptoms, suddenly dropped dead ten days after delivery, the death being due to embolus of the right pulmonary artery. There was a double uterus and vagina, caused by the formation of a large rectovesical ligament. In the right uterus was an almost mature pregnancy, which had been diagnosed at the time of delivery of the first child.

Acute Bed-sore following Birth. Blacker³ reports an interesting case of a multipara, twenty-six years old, with a normal labor till the end of the second stage. There was considerable hemorrhage after birth, and manual extraction of the placenta was necessary. During the labor, to relieve the pains, the lower part of the back was supported by the knee of an attendant for about an hour. On the first day after birth the skin over the sacrum was found bruised over an area three by two inches, which was surrounded by vesicles filled with watery fluid. On the second day a slough was formed, on the third day a sinus leading down to the sacrum, and the whole of the bruised area sloughed in the next few days. The slough was removed, and cure followed in two months.

Influenza. Bar and Boullé⁴ collected a number of cases of influenza during pregnancy and the puerperium. Its course is severer, but its influence on the course of pregnancy slight. In two out of forty cases metrorrhagia was observed, and in these two pregnancy was not inter-

¹ Münch. med. Wochenschrift, 1897, No. 2.

² Gesellsch. f. Geb. u. Gyn., Berlin, January 13, 1898; rep. by Cent. f. Gyn., 1899, No. 12.

³ Transactions of the Obstetrical Society of London, 1898, vol. xl., part iii.

⁴ Obstetrics, 1898, No. 3.

rupted. It seems to have no abortive character. In one case the placenta showed hemorrhagic foci.

The Influence of the Puerperal Period on Ovarian Cysts. It is generally agreed that ovarian tumors should be removed during pregnancy if discovered at that time. They are, as is well known, likely to cause great difficulty during delivery, and they are further liable to undergo modifications during the puerperium. The principal changes may be (1) the formation of adhesions, the result of slight inflammation due to pressure or bruising of the cyst during labor; (2) torsion of the pedicle; this is specially predisposed to by the rapid alteration in size of the uterus, and consequent diminution of the intra-abdominal pressure after delivery; (3) infection of the cyst contents may occur; this generally causes rise of temperature, and if the cyst has not been recognized may simulate puerperal infection. Sometimes the cyst may suppurate without any rise of temperature, and then, very suddenly, severe symptoms may arise.

Gottschalk¹ records a case of this kind. The patient, aged forty years, after thirteen years' sterility, was delivered of a living child naturally. On the second day she had abdominal pain and symptoms of peritonitis, which, however, rapidly subsided. Nine weeks later she became very ill, with signs of severe general peritonitis. Operation was performed. A cyst of the right ovary was found, with strong adhesions to the bowels and parietal peritoneum. The cyst was removed with some difficulty. It contained greenish pus, of fetid odor, and in its upper part a quantity of offensive smelling gas. The pedicle had been twisted twice on its axis, and was formed of the ovarian ligament. There was in addition a localized intraperitoneal collection of pus at the side of the uterus. The general peritoneum contained ascitic fluid. The patient recovered rapidly. It is interesting to note that the *baeillus coli communis* was isolated, in pure culture, from the ovarian cyst, whereas in the pelvic abscess *staphylococcus pyogenes albus* was alone present. It is debatable which of these organisms was the exciting cause of the suppuration. It is well known, however, that the *baeillus coli communis* may produce purulent peritonitis and pyosalpinx, and in this case the dense adhesions uniting the cyst to the intestine would readily allow the migration of the bacillus.

LACTATION.

Analysis of Mother's Milk. The most important paper on this subject has been given us by Michel,² who has carefully analyzed not only the milk but also the infant's feces, in order to see how much of

¹ Anal. l'Obstetrique, July, 1898.

² Obstetrique, 1897, No. 6.

the different constituents was utilized. In relation to human milk analysis he says :

It has been variously given—Vernois and Bequerel found 3.924 albuminoid, Filhol and Joly only 0.850. This difference depends on different factors, as errors in analytic procedure, constitution, different physiological and pathological conditions, manner of nourishment, age of the milk (reckoned from birth). He claims the analysis is different at different times in the day, and for that reason he examined milk collected at three different times: 20 c.cm. at the beginning of the nursing act in the morning, 20 c.cm. at the middle of the act (at noon), and 20 c.cm. at the end of the act in the evening. These 60 c.cm. gave an average in 72 cases as follows (14 times it was taken between the fifth and the fifteenth day, and 58 times between the second month and one year): Specific weight, 1032.5 g.; water, 908.64 g.; dry extract, 123.86 g.; mineral salts, 2.06 g.; fat, 33.81 g.; lactose, 72.35 g.; nitrogen, 1.996 g.; proteids, 13.47 g.; undetermined extractives, 2.17 g.

It was found that the milk a short time post-partum was richer in nitrogenous material and mineral salts, but poorer in butter, and especially in lactose, than the milk two to twelve months post-partum.

In analyzing the composition of the stools of the infants the specimens were taken between the fifth and fifteenth days. He found: Fat and fatty acid, 20.65 g.; total nitrogen, 4.101 g.; mineral salts, 10.78 g.; chalk, 3.32 g.; phosphoric acid, 0.73 g.; water, 77.18 g.

He then gives a comparative table showing what the infant uses and how much: A new-born infant of medium weight (3420 g.) takes in daily 566 g. of milk, therefore of mineral salts 1.486 g.; chalk, 0.244 g.; phosphoric acid, 0.263 g. He eliminates daily 3 g. dried feces, therefore of mineral salts 0.323 g.; chalk, 0.099 g.; phosphoric acid, 0.022 g. He therefore uses of the mineral salts 78.26 per cent.; chalk, 59.42 per cent.; phosphoric acid, 91.63 per cent.

His résumé is that a new-born child between the fifth and fifteenth day, weighing 3420 g. and normal, uses the nutritive material of its mother's milk as follows: The entire nutritive material, 96.11 per cent.; fat, 96.35 per cent.; nitrogenous material, 93.60 per cent.; mineral salts, 78.26 per cent.; chalk, 59.42 per cent.; phosphoric acid, 91.63 per cent.

Carter¹ analyzed 94 samples, and found wide variations in every constituent, the greatest being in the fat, one case showing 8.82 per cent., another only 0.47 per cent. Proteids varied from 4.05 per cent. to 1.02 per cent.; sugar from 8.89 per cent. to 4.38 per cent. Among 42 children under observation 5 died; in each of the fatal cases, with one exception, the percentage of proteids was high, ranging from 2.05 to 4.02 per

¹ British Medical Journal, January 22, 1898.

cent. In every case but three, where the proteids exceeded 2.5 per cent., the milk disagreed. Eighty-seven of the examinations were made during the first four weeks of the puerperium. The average analysis was: Water, 88.04 per cent.; fat, 3.07 per cent.; sugar, 6.59 per cent.; albumin, 1.97 per cent.

As to the influence of menstruation on nursing and how often it proves a complication of nursing, Jacob¹ tells us that menstruation comes on in nursing women in 98 out of 136 primiparæ (72 per cent.), most frequently in the sixth month, post-partum; 59 out of 92 secundiparæ (63 per cent.), most frequently in eight to twelve months; 18 out of 45 tertiparæ (40 per cent.).

In multiparæ nursing for the first time the menses appeared later according to the length of time between the first delivery and the nursing. In a certain number of multiparæ who always nursed, menstruation was never observed. They appeared especially well nourished. During menstruation there is an increase in the constant constituents of the milk and a decrease in the daily quantity. Sometimes in weighing the child there is a slight decrease in weight during the hemorrhage, but without any influence on the general increase of weight. Again, there are cases where in the fourth, fifth, or sixth nursing period large menstrual bleedings appear, which up to that time had not taken place. According to Pinard, this signifies a wasting of the mammary glands, and nursing should be stopped. Pregnancy during lactation is always possible whether the menses have appeared or not, but the chances are greater in the latter case, and in young women rather than in old. In relation to the influence of pregnancy on nursing, Sutlis² concludes from twenty-six cases that the sucking child usually begins to lose weight when the new pregnancy begins; but, he adds, any disease on the part of the mother or the beginning again of menstruation will cause the same.

What drugs are eliminated in the milk and their influence still remains a prolific subject for study. Fieux³ concludes as to the influence of antipyrin on lactation:

1. It undoubtedly goes over into the mother's milk.
2. Doses of one gramme twice within two hours can be found in the milk five hours later; after nineteen to twenty-three hours no more traces are to be found.
3. The quantity of the milk and its quality are not changed. The examination of the child and its excretions showed no injurious influence of the antipyrin.

¹ Inaug. Diss., Paris, G. Steinheil, 1898; *Cent. f. Gyn.*, 1898, No. 38.

² *Obstetrics*, 1898, No. 1.

³ *Revue Internat. de Med. et de Chir. Prat.*, 1897, No. 18.

Galactagogues. Drews¹ insists that somatose is a specific. He gave his opinion² on it in 1896, and reiterates that opinion now, after an extended experience, that it acts on the milk secretion specifically, so as to increase it and make it richer. He believes, too, that it has a good effect on the disturbance due to a poor secretion. He claims it will even bring back secretion that has ceased when this is not the result of disease of the gland. Kaans³ says that somatose, when given to the mother, increases peristalsis in the suckling, and so is useful in dyspeptic conditions of the infant associated with constipation.

Joachim⁴ gives details of fifteen cases in which he gave somatose to mothers whose supply of milk was failing. He found that the result was good in those cases in which the somatose improved the appetite and general condition. He does not, however, agree with Drews, of Hamburg, who states that somatose has a specific influence on the secretion of the mammary gland. Many women who are anxious to suckle their children are driven reluctantly to use the bottle, and in cases of this kind somatose is probably well worth trying.

Bendix⁵ (Berlin), by giving "jodsesamöl" with ordinary food to a nursing woman, proved that there is an actual going over of the fat eaten into the fat of the milk. From this it follows that a diet rich in fat (if it is well borne) should be given to the woman, since by this means the body albumin will be spared. Schein⁶ claims that the milk secretion after birth depends on the reflection of the blood-stream from the genital organs to the breasts by means of the circulation in the abdominal wall. After attempts made in Schauta's clinic he believes that he is able to get results in many cases where the milk is insufficient or absent by massage of the abdominal wall.

Budin⁷ relates an experiment in France on wet-nurses that indicates the ability of the mammary gland to increase its functional activity up to a certain limit by increasing the demands made for the supply of milk. On October 1, 1895, there were in the Maternity 50 children and 14 nurses to nurse them. On an average, therefore, each nurse had 4 children to nurse nine times daily. Under these conditions the 14 nurses soon became exhausted and their children made no progress. The number of children was reduced to 40, and every nurse then had 3 children to nourish. From this time the children gained in weight and the quantity of milk of individual nurses increased. The entire amount supplied by 7 nurses on October 1st was 11,605 grammes, average 1657

¹ Cent. f. innere Med., 1899, No. 3, and Wiener med. Presse, 1898, Nos. 10 and 17.

² Cent. f. innere Med., 1896, No. 3.

³ Allgemeine Wiener med. Zeitung, 1897, No. 27.

⁴ Centralblatt f. innere Med., 1898, No. 10.

⁵ Deutsch med. Woch., 1898, No. 14.

⁶ Wiener klin. Woch., 1898, No. 18.

⁷ Obstetrics, 1897, No. 5.

grammes ; on November 29th, 15,610 grammes, average 2270 grammes ; On September 10th, 11,840 grammes, average 1690 grammes ; on January 14th, 10,020 grammes, average 1431 grammes. Further experiments determined that the nurses could produce from 1657 to 2270 grammes when forced. He concludes, therefore, that if a woman has not enough milk for one baby, add a second baby and more milk will be produced.

Diseases of the Breasts. EPIDEMIC MASTITIS. Schwarz¹ (Pees), in the year 1896, observed an epidemic mastitis phlegmonosa in twelve puerperal cases. It began always with chill and high fever, and continued with swelling, reddening, and tenderness of one breast, and then of both. The nipples showed no excoriation or fissures. The epidemic occurred in the practice of a midwife who was at the time treating a child suffering from stomatitis, whose mouth she was accustomed to wash out without subsequent disinfection of her hands. The abscesses were all deep and were treated by incision, with drainage and irrigations of lysol. The pus was thick and bloody. Microscopical examinations showed numerous streptococci and staphylococci ; no micrococcus tetragenus. All the cases recovered.

ECHINOCOCCUS OF THE BREASTS. Goinard and Gergent² (Algiers) report a case : The patient, twenty-five years old, noticed while nursing her third child a small nodule in her left breast, which gradually increased in size even when she stopped nursing after the death of her child. She became pregnant twice later, but aborted each time. During the last year the tumor had grown more quickly, and finally it broke and emptied itself of pus. On examination the tumor was found movable, not attached to the pectoral muscle, the nipple was drawn in, and fluctuation was detected at the upper border. The axillary glands were swollen and painless. A diagnosis of chronic mastitis was made, but the whole breast, with the axillary glands, was removed by the operator. Examination showed echinococcus cyst with exogenous proliferation.

Vitrac³ also presents a case of echinococcus of the breast. A woman, twenty-one years old, who had borne a child three and a half years before and had nursed it for two years, noticed a small tumor of the breast, which was movable and painless. It grew rapidly for five months, then a physician was called. The tumor was now the size of a fist, non-adherent to the skin, and showed fluctuation. A diagnosis of fibroma or cystic adenoma was made. It was so easily enucleated that only a part of the mamma was removed. Examination showed a cyst with watery, clear fluid and countless hooklets.

¹ Oroosi hetilap, 1897, No. 23 ; Rep. Cent. f. Gyn., 1898, No. 36.

² Archiv. Prov. de Chir., 1897, No. 11 ; Ref. Cent. f. Gyn. 1898, No. 15.

³ La Presse Médicale, 1897, No. 46.

MILK FEVER, Fehling contends, is a term covering too many conditions, and should, consequently, be dropped from consideration, especially since there is no second example where the normal functioning gland causes fever; at most it ought only to be thought of when there is marked tension of the breasts. But Heidemann¹ believes there is a milk fever that is the result of infection which usually has its origin in the genital tract. The poison enters the circulation from the uterus, paralyzes the vasomotor nerves, and the blood-supply of the breast is so constituted that swelling of the breasts follows the paralysis. He calls attention to the fact that in other puerperal infections the breasts are often swollen, and notes the fact that they are not usually red, and that evidence of local inflammation in the skin is entirely absent. On the contrary, the symptoms of septic infection are strikingly present.

¹ Monatsch. f. Geb. und Gyn., Band viii., Heft 3.

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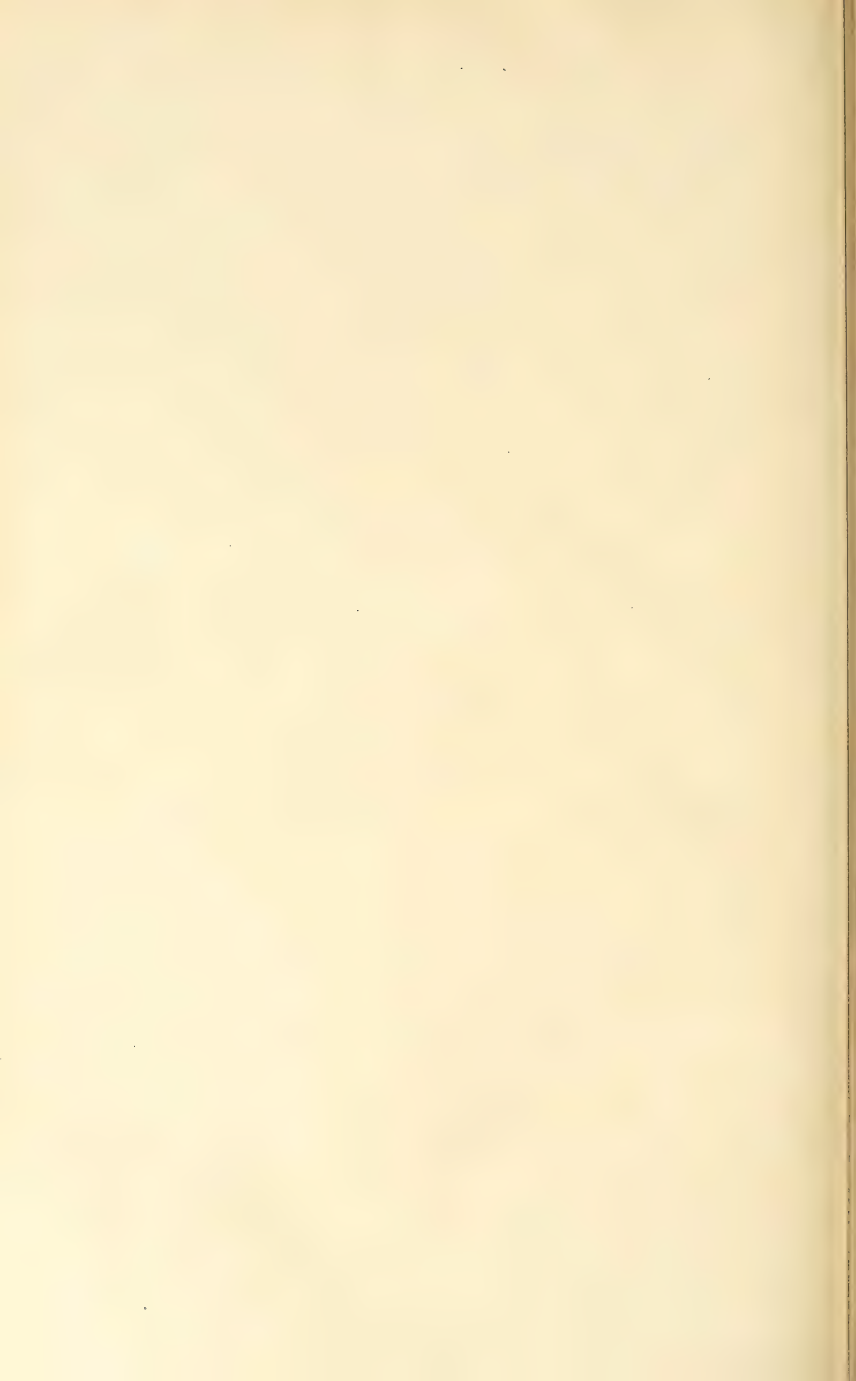
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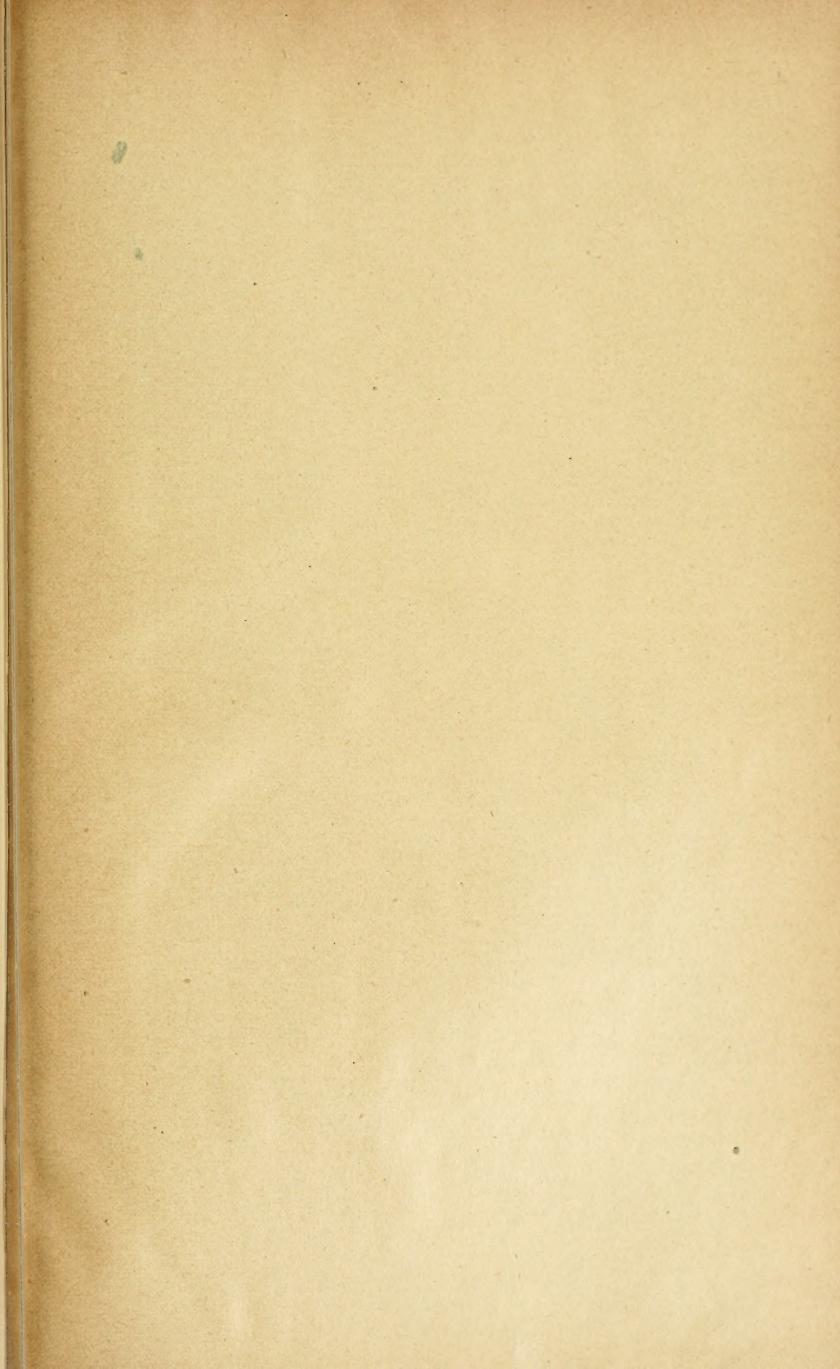
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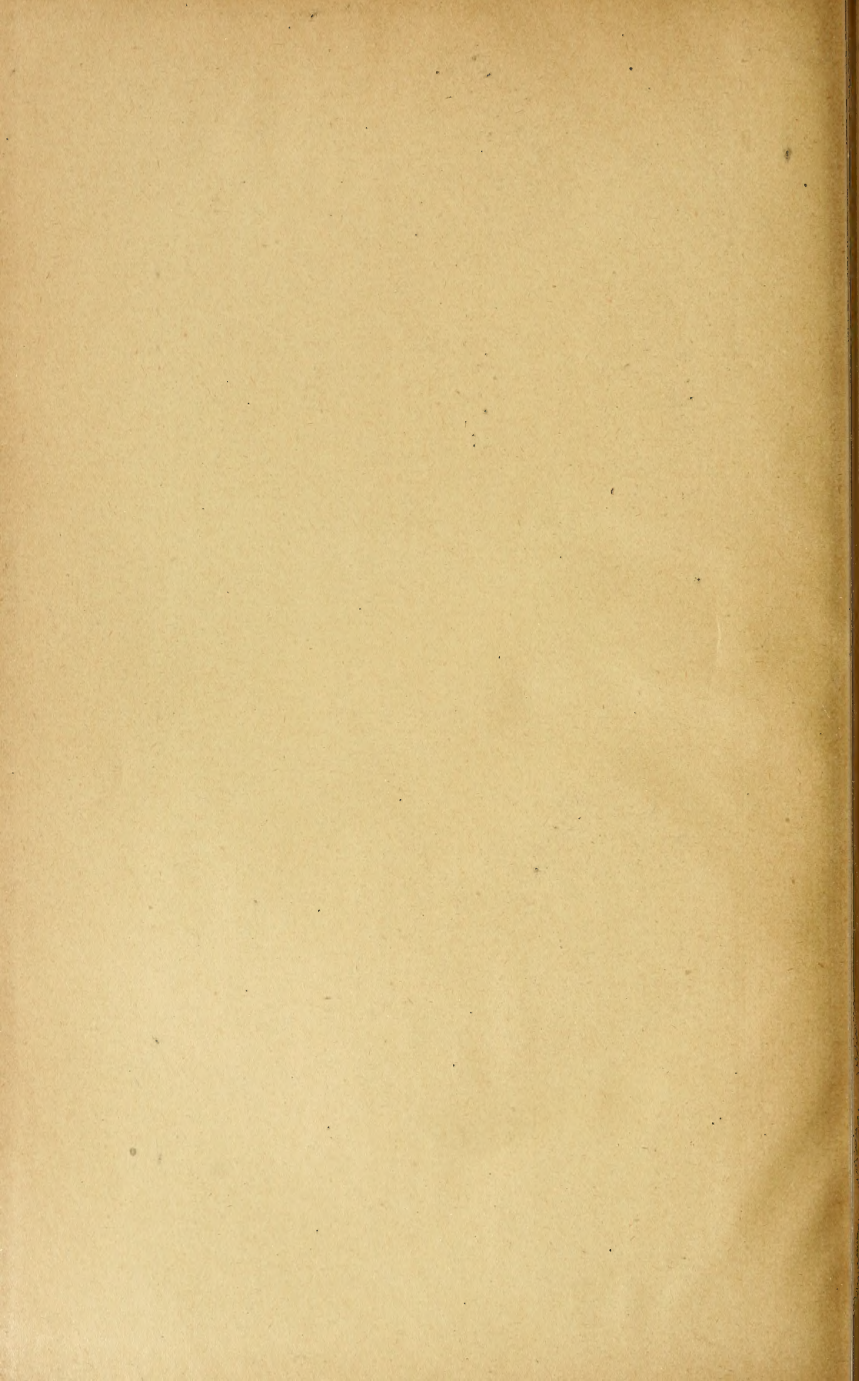
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